MEDICINAL AND AROMATIC PLANTS
PROGRAM IN ASIA (MAPPA)
IDRC Project No. 004359

MID-TERM EVALUATION REPORT

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<tr>
<td>ANSAB</td>
<td>Asian Network for Small scale Agricultural Bioresources</td>
</tr>
<tr>
<td>AVS</td>
<td>Arya Vaidya Sala</td>
</tr>
<tr>
<td>CAMP</td>
<td>Community Assessment and Management Planning</td>
</tr>
<tr>
<td>CBO</td>
<td>Community Based Organization</td>
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<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>CBNRM</td>
<td>Community-Based Natural Resource Management</td>
</tr>
<tr>
<td>CECI-Nepal</td>
<td>Canadian Centre for International Studies and Cooperation</td>
</tr>
<tr>
<td>CF</td>
<td>Community Forest</td>
</tr>
<tr>
<td>CFUG</td>
<td>Community Forest User Group</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
</tr>
<tr>
<td>CSE</td>
<td>Centre for Science and Environment</td>
</tr>
<tr>
<td>DEBTEC</td>
<td>Development of Biotechnology &amp; Environmental Conservation Center</td>
</tr>
<tr>
<td>FECOFUN</td>
<td>Federation of Community Forestry Users</td>
</tr>
<tr>
<td>FRLHT</td>
<td>Foundation for Revitalization of Local Health Traditions</td>
</tr>
<tr>
<td>FUG</td>
<td>Forest User Groups</td>
</tr>
<tr>
<td>GO</td>
<td>Government Organization</td>
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<tr>
<td>HFRC</td>
<td>Herbal Folklore Research Centre</td>
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<tr>
<td>HPPLC</td>
<td>Herbs Production and Processing Co. Ltd</td>
</tr>
<tr>
<td>IES</td>
<td>Indian Environmental Society</td>
</tr>
<tr>
<td>HEJ</td>
<td>Husein Ebrahim Jamal Research Institute of Chemistry</td>
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<tr>
<td>IDRIS</td>
<td>IDRC Development Research Information System</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>IIFM</td>
<td>Indian Institute of Forest Management</td>
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<tr>
<td>IMPN</td>
<td>IDRC Medicinal Plant Network</td>
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<tr>
<td>ITI</td>
<td>Industrial Technology Institute</td>
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<tr>
<td>IUCN</td>
<td>World Conservation Union</td>
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<tr>
<td>IDRC</td>
<td>International Development Research Centre</td>
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<tr>
<td>JFM</td>
<td>Joint Forest Management</td>
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<tr>
<td>PCT</td>
<td>People's Clinic Trust</td>
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<tr>
<td>MAPs</td>
<td>Medicinal and Aromatic Plants</td>
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<tr>
<td>MAPPA</td>
<td>Medicinal and Aromatic Plants Programme in Asia</td>
</tr>
<tr>
<td>MFP</td>
<td>Minor forest product</td>
</tr>
<tr>
<td>MP</td>
<td>Madhya Pradesh (state in India)</td>
</tr>
<tr>
<td>MPSCG</td>
<td>Medicinal Plant Specialist Group (IUCN)</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-government Organization</td>
</tr>
<tr>
<td>NTFP</td>
<td>Non-timber forest products</td>
</tr>
<tr>
<td>PFI</td>
<td>Pakistan Forest Institute</td>
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<tr>
<td>PPI</td>
<td>People and Plants Initiative</td>
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<tr>
<td>SAFE Concern</td>
<td>Socio-Economic Agroforestry and Environment Concern</td>
</tr>
<tr>
<td>SARO</td>
<td>South Asia Regional Office (of IDRC)</td>
</tr>
<tr>
<td>SHER</td>
<td>Society for Himalayan Environment and Research</td>
</tr>
<tr>
<td>SUB (SUB PI)</td>
<td>Sustainable Use of Biodiversity – Program Initiative at IDRC</td>
</tr>
<tr>
<td>TEK</td>
<td>Traditional Ecological Knowledge</td>
</tr>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TRUGA</td>
<td>Training for Rural Gainful Activities</td>
</tr>
<tr>
<td>TSM</td>
<td>Traditional System of Medicine</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific, and Cultural Organization</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
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Executive Summary

1. Background:
The Medicinal and Aromatic Plants Program Asia (MAPPA) is a program of strategic research, networking and collaboration intended to address critical research issues related to the sustainable and equitable use of medicinal and aromatic plants (MAPs). MAPPA was launched as a project funded under IDRC on April 1, 1998 with co-funding support from the Ford Foundation’s New Delhi office. The program concentrates its efforts around three ‘modalities’:

1. Small Grant Program: a ‘responsive’ program of research with a pipeline of projects which address priorities identified and articulated by research partners in a competitive proposal review and project selection process. MAPPA currently supports 13 projects in India, Nepal, Pakistan, Sri Lanka and Bangladesh;

2. Commissioned studies and national consultations: similar to the small grants in administration, the commissioned studies are typically ‘targeted’ initiatives with a specific purpose that is complementary to the small grant projects;

3. Networking and productive partnerships: activities designed to enhance regional cooperation and improve information sharing between, and within, the research community and government organizations.

The original MAPPA project is currently coming to the end of its third year, with a proposed completion date of March 2003, although plans are currently being made to continue the MAPPA program with additional co- and parallel funding from other donors operating in the region. As an integral component of program planning, a mid-term evaluation was commissioned in order to review the progress achieved to date, and prioritize activities for the remaining year of programming and future phases.

2. Evaluation Objectives:
As agreed upon by the evaluation team, the Program Coordinator, and the Senior Program Officer, the objectives for the evaluation were:

1. To monitor and evaluate the progress made towards MAPPA’s original program objectives and to recommend changes in direction and manners of operation for remaining programming period or future phases of MAPPA;

2. To document the extent to which the MAPPA small grant projects are contributing to MAPPA’s overall program goals and objectives;

3. To assess the strengths and weaknesses of the small grant approach and determine the extent to which the MAPPA program has enhanced regional networking;

4. To identify opportunities for ‘scaling up’ of project results and broader methodological issues;

5. To visit four MAPPA-funded small grant projects in order to document the extent to which they are meeting their objectives and recommend changes in direction for the remaining project period or future MAPPA-funded phases.
3. Evaluation Methodology:
As a mid-term review, the evaluation was designed with the specific intention of assessing the outputs and outcomes of various activities, and did not include an assessment of impacts. Data collection for the evaluation consisted of:
- a detailed review of program and project documents,
- a survey of all project leaders,
- interviews with the Program Coordinator and Senior Program Officer, and
- visits to four small grant projects where interviews and focus groups were conducted with project staff and a non-random, non-representative sample of project beneficiaries.

This mid-term evaluation has served to highlight several of MAPPA’s key program strengths, and to identify areas in which MAPPA has contributed substantially to the field in terms of advancing innovative methodologies and producing leading edge research results. Through the systematic analysis of the contribution of its portfolio of projects toward each of the program objectives, the evaluation has highlighted gaps and hence set priorities for future project development. The evaluation has also highlighted general areas of improvement/refocus to be considered for the remaining implementation period of the project.

4. Major Program Contributions:
The predominant focus of MAPPA supported research has been on developing and transferring technologies for the domestication and cultivation of medicinal plants on private farm land and in kitchen/community gardens; secondly on researching and promoting sustainable harvesting methods, and cultivation of MAPs in community maintained forests. A lesser but still substantial focus has been on developing marketing strategies and relationships with industry/buyers, and training local community members in market integration. The third, and less pronounced focus of MAPPA supported research has been on supporting traditional healers, supporting MAP based health delivery systems as culturally appropriate and affordable options for health care, and safety and efficacy studies.

5. Strengths of the Small Grant Project Approach:

- **Institutional Capacity Building:** MAPPA currently provides considerable logistical, technical and research support to partners, particularly in the early phases of proposal and project development. Project Leaders have identified this individualized support as a key strength of MAPPA, particularly for building capacity of emerging and small-scale institutions.

- **Community Capacity Building:** The majority of MAPPA supported projects include a component of capacity building of community members and beneficiaries. This is accomplished through partnerships with local organizations and directly through training programs. Three of the four projects visited during the evaluation worked with tribal and marginalized groups. They do not, however, take adequate measures to link with local women’s organizations, or undertake gender analysis that will identify gender-differentiated priorities, opportunities and needs.

- **MAPPA as a Neutral Convenor:** As MAPPA is formed as a program of research and not a ‘member organization’ or a formal network, MAPPA is seen as a neutral convenor and the relationships with ‘knowledge partners’ remain mutually beneficial and iterative.

- **Effective Local Level Research and Dissemination:** The nature of the small grant mechanism facilitates research at the local level for both emerging and established research institutions. This supports the establishment of effective, mutually beneficial and long-term partnerships with local communities and civil society organizations operating in those
6. Weaknesses of the Small Grant Project Mechanism:
   - **Short project cycle:** Several MAPPA small grant recipients identified the short project cycle as a weakness of the small grant mechanism in the Project Leader survey. This, however, is expected for a small grant mechanism, and is addressed by encouraging small grant recipients to broaden their funding base and avoid being dependent solely on MAPPA.
   - **Few information sharing mechanisms available between projects:** The majority of respondents to the Project Leader Survey recommended improved opportunities for collaboration between small grant recipients, as information sharing was found to be centralized and dependent on the role of the MAPPA Coordinator.
   - **Capacity Building in Social and Gender Analysis:** Few MAPPA supported project partners take adequate measures to link with local women’s organizations, or undertake gender analysis that will identify gendered priorities, opportunities and needs.
   - **Lack of consistent MAPPA protocol for project monitoring and evaluation:** With the exception of preparing final technical reports for submission to MAPPA, very few projects have developed or followed consistent project monitoring and evaluation frameworks during the project implementation cycle.

7. Information Sharing and Networking:
   - **Weakness/Constraint:** MAPPA’s current budget is a major constraint for meeting its objective of improving networking in the region, given that the bulk of the operating budget is primarily allocated for small grant administration, without a provision for networking/information sharing. With improved resources dedicated to the networking and partnership functions of MAPPA’s co-ordinating unit, there is substantial room for improved information sharing and productive partnerships between MAPPA affiliated small grant recipients, that does not necessitate the formation of a ‘member organization’ or formal network.
   - **Recommendation:** The regional workshop on Sharing Experiences held in Pokhara, Nepal (January 2001) has been the only explicit MAPPA organized opportunity for MAPPA partners and other agencies working in the field to directly share their research experiences and results and set priorities for a regional research agenda. Project Leaders articulated a need for new opportunities for researchers to share experiences, discuss best practices, and develop collaborative exercises to identify policy level recommendations pertaining to comparative findings. The synthesis and scaling-up of collective and comparative results would allow the MAPPA program to continue to challenge the evolution of a regional research agenda on MAPs.

8. Partnership Development and Capacity Building:
   - **Community Capacity Building:** The nature of the small grant mechanism facilitates research at the local level for both emerging and established research institutions, which is often effective in forming close, mutually beneficial and long-term partnerships with local communities. Six projects have focused a large portion of resources on training and information dissemination at the local level. This has typically occurred through conducting awareness raising campaigns and the development of local information centres and/or demonstration gardens. The degree to which results are disseminated, retained and used within local communities is also a strength of MAPPA supported research.
• **Institutional Capacity Building:** From an institutional perspective, several Project Leaders reported that the assistance provided by the Program Coordinator and MAPPA consultants visiting the projects have substantially contributed to methodology development and enhanced research results.

• **External Partnerships:** In that MAPPA is formed as a program of research and not a member organization or a formal network, MAPPA is seen as a neutral convenor and the relationships with ‘knowledge partners’ remain mutually beneficial and iterative. One example of this has been MAPPA’s role in the promotion of Medicinal Plant Boards at the state and national levels in both India and Nepal. To be viewed as a neutral body in the region is particularly challenging, given Asia’s complex institutional, social and geopolitical environment. Although there is room for improvement, MAPPA has contributed substantially to bringing together non-traditional partners and perspectives to improve the impact and diffusion of research results.

9. **Project specific opportunities for scaling-up:**
   • The sustainable harvest limits established by CECI, and the process by which the process incorporated the participation of local community members in the research process would provide valuable lessons for other similar projects;
   • SHER has met with marked success in domesticating and propagating species such as *Aconitum atrox*, *Aconitum heterophyllum* and *Saussurea costus*, both through root/tuber cuttings and seed germination.
   • SHER’s process and results in the creation of a formal biopartnership between MAP cultivators and industry will provide valuable lessons for other projects working towards establishing equitable sharing of benefits.
   • The curriculum developed by SAFE Concern is highly replicable in many other project sites.
   • There is substantial potential for scaling up of lessons from ITI/RITICOE’s approach to transferring technologies for improved processing of raw materials, and mobilizing and involving community members.

10. **Methodological issues requiring further research, support or improvement:**
    • **Improve capacity for conducting gender and social analysis in projects:** it is recommended that MAPPA provide improved requirements at the program level to incorporate gender issues during the design, implementation and monitoring phases of the project.
    • **A clearer definition of ‘community-based’ is needed at the program level:** MAPPA had intended to directly benefit the rural poor and indigenous communities, and has followed through on this commitment to a large extent. However, the concept of what constitutes collaborative community participation in the research process varies substantially between projects. As such, a clearer articulation of the definition of the concepts of ‘community based’ and ‘community participation’ is required at the program level.
    • **Impact assessment of the ‘conservation through cultivation’ approach required:** A further point of methodological significance in MAPPA concerns the question of conservation through cultivation and domestication. More synthesis is required to understand the specific conditions under which cultivation and domestication of MAPs is, or can be effective at conserving biodiverse resources, reduce harvest pressure on wild resources while ensuring equitable access to biodiverse resources. Given the wealth of experience in the MAPPA supported research projects, MAPPA is well positioned to develop a coherent and rigorous framework for researching the relationship between conservation, equitable access to biodiversity resources, and domestication and cultivation of MAPs.
    • **Investigation of integrated ABS/IPR mechanisms required:** Project proposals indicate that the majority of researchers are interested and committed to recognizing the intellectual
property rights of traditional and local communities. However, project reports reflect a lack of expertise necessary to systematically and formally address these issues. It is therefore recommended that MAPPA commission a study to identify potential guidelines for establishing and integrating local IPR and ABS mechanisms, prior to or in conjunction with documenting traditional knowledge.

11. Overall Recommendations:
There are four key areas in which MAPPA could refocus in order to build on existing strengths, meet current objectives and enhance its contribution to the field. These areas are:

- enhancing the self sustaining mechanisms/forums for MAPPA partners (small grant recipients) to collaborate in order to set shared priorities for conservation, share information relevant to methodologies, approaches and best practices;
- improving the required process for projects to conduct policy analysis, identify local, state and national policy constraints to conservation, create policy directives based on collective, scaled-up results, and ultimately create a policy environment conducive to conservation;
- improving resources available to project teams for conducting social and gender analysis and use new capacity to assess the social, economic and conservation impacts of the domestication and cultivation of MAPs;
- investigating and developing mechanisms for integrating community benefits and access to project results, with intellectual property issues, especially for projects documenting specialized traditional or local knowledge.

12. Conclusions
While it is difficult at this stage to rigorously evaluate the success of MAPPA in terms of meeting its five main goals, it is clear from the evaluation visit, the review of project documents and the Project Leader survey, that MAPPA is providing an essential service in the field of medicinal and aromatic plant research in Asia. Its provision of support to emerging grassroots research organizations has resulted in the generation of key research results that have informed policy and decision making at national and state levels, while also addressing local priorities related to health, livelihoods and access to biodiverse resources.

In that MAPPA is formed as a program of research and not a ‘member organization’ or a formal network, MAPPA is viewed as a neutral convenor and the relationships with ‘knowledge partners’ remain mutually beneficial and iterative. In this sense, the MAPPA program has succeeded in developing a regional reputation as a research program with effective convening power, in that it can build on comparative findings from grassroots research initiatives and contribute constructively to policy debates.

MAPPA is therefore well positioned to move into its next programming phase. With improved opportunities for collaboration between small grant recipients in order to synthesize and analyze collective research results and methods, the presently ad hoc collection of research projects will grow into a regional corps of research with substantial potential to influence policy and decision making in the region.
1.0 INTRODUCTION

IDRC’s support for research on medicinal plants began in South Asia in 1994 and is primarily coordinated through the Medicinal and Aromatic Plants Program in Asia (MAPPA). MAPPA is a program of strategic research, networking and collaboration, intended to address critical research issues related to the sustainable and equitable use of medicinal and aromatic plants (MAPs). The program concentrates its efforts around three ‘modalities’:

4. **Small Grant Program**: a ‘responsive’ program of research with a pipeline of projects which address priorities identified and articulated by research partners in a competitive proposal review and project selection process;

5. **Commissioned studies and national consultations**: similar to the small grants in administration, the commissioned studies are typically ‘targeted’ initiatives with a specific purpose that is complementary to the small grant projects;

6. **Networking and productive partnerships**: activities designed to enhance regional cooperation and improve information sharing between, and within, the research community and government organizations.

As outlined in the 1998 MAPPA proposal, activities were planned around three inter-related research focuses:

- strategic research to develop innovative conservation methods,
- the promotion of sustainable and equitable commercialization, and
- the improvement of options for safe and effective health care.

MAPPA was launched on April 1, 1998 with co-funding support from the Ford Foundation’s New Delhi office. The MAPPA project, which was the first activity of the MAPPA program, is currently coming to the end of its third year, with a proposed completion date of March 2003. As an integral component of program planning, a mid-term evaluation was commissioned in order to review the progress achieved to date, and prioritize activities for the remaining period of the MAPPA project and future phases of the program. Although the program eventually intended to cover both the South and South East Asia regions, due to limited funding and higher regional demand MAPPA activities have been focused predominantly in South Asia, and have included projects and activities in Bhutan, Bangladesh, India, Nepal, Pakistan and Sri Lanka.

2.0 Midterm Evaluation

2.1 Background and Purpose

This document presents the results of a mid-term evaluation undertaken by the authors, at the request of the South Asia Regional Office (SARO) of IDRC. The evaluation team was comprised of consultants Carolyn Switzer from Canada, and Dr. Nirmal Bhattarai from Nepal. Both team

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1 A clear distinction is being made between the MAPPA program and the MAPPA project in the report as MAPPA was conceived as a program but was started with a MAPPA project. This evaluation is primarily evaluating the MAPPA project but utilizing the inferences of the evaluation results to suggest steps to enhance the program.
members had prior experience working with various aspects of the MAPPA program, including leading monitoring visits to small grant projects and participating in regional meetings such as a MAPPA partners meeting and a MAPPA-sponsored Community Assessment and Management Planning (CAMP) workshop, both in January 2001 in Pokhara Nepal. Carolyn Switzer served as the Lead Evaluator and was responsible for preparing the evaluation framework, workplan, criteria, interview guides, and the Project Leader survey (in collaboration with the MAPPA Program Coordinator); reviewing project and program documents; participating in project visits; and compiling the complete Mid-term Evaluation report. As the co-evaluator, Dr. Bhattarai was responsible for reviewing documents related to the case study projects, participating in project visits and preparing technical observations related to specific small grant projects for inclusion in the final evaluation report.

The mid-term evaluation was commissioned in order to report on progress made towards program objectives and to identify broad methodological issues that have emerged out of the MAPPA funded research. Additionally, the evaluation was intended to highlight the strengths and weaknesses of the ‘small grant’ approach to networking and program planning; and to identify potential opportunities for the ‘scaling-up’ of lessons in research on MAPs. The evaluation is therefore intended to inform future IDRC supported research in medicinal and aromatic plants in the region.

The recommendations are intended to provide field perspectives and suggest adjustments and (direct) changes that have the potential to enhance programming in the future as well provide inputs for the final year of the MAPPA project thereby ensuring that the project objectives are met and the program moves in the intended direction. Ultimately, the recommendations have been drafted to inform the design of the next phase for the MAPPA project and other projects under the MAPPA program.

2.2 Evaluation Objectives

The objectives for the evaluation were designed in collaboration with MAPPA’s Program Coordinator and Senior Program Officer in SARO, with feedback from various SUB staff and external program advisors. As a mid-term review, the evaluation was designed to assess the outputs and outcomes of various activities, and did not include an assessment of impacts.

1. To monitor and evaluate the progress made towards MAPPA’s original project objectives and to recommend changes in direction and manners of operation for the remaining project period or future phases of MAPPA, and related projects under the MAPPA program;

2. To document the extent to which the MAPPA small grant projects are contributing to MAPPA's overall program goals and objectives;

3. To assess the strengths and weaknesses of the small grant approach and determine the extent to which the MAPPA project has enhanced regional networking;

4. To identify opportunities for ‘scaling up’ of project results and broader methodological issues;

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2 ‘Scaling-up’ is a term used at IDRC to describe opportunities and mechanisms with which to package, learn from and showcase the successful outputs and methods of programs and projects. Scaling up from community based research for a wider application of results in a way that will have some influence on policy and decision making is an emphasis of most IDRC supported projects and programs.
5. To visit four MAPPA-funded small grant projects in order to document the extent to which they are meeting their objectives and recommend changes in direction for the remaining project period or future MAPPA-funded phases.

Discussion regarding the evaluation objectives will be grouped around MAPPA’s five programming objectives. Given that the evaluation objectives overlap considerably, they will be addressed throughout the narrative and will be summarized at the end of the document. The case studies of the four small grant projects visited during the evaluation are presented in Annex 2 of this main document.

### 2.3 Evaluation Methodology

#### 2.3.1 Data Collection

The conclusions drawn in this report are based on information from a variety of sources, including:

1. Review of program and project documents, including proposals; quarterly, interim and final reports; financial reports; monitoring reports; correspondence and publications that result from the project;

2. Review of collective MAPPA ‘outputs’ such as the Medicinal Plant Newsletter published by FRLHT, the report published from the MAPPA-sponsored CAMP workshop in Pokhara, presentations made by the Coordinator at various venues; MAPPA brochures, etc.

3. IDRC reporting documents such as Trip Reports of the Program Coordinator and the Senior Program Officer;

4. Visits to three small-grant project sites that served as Evaluation Case Studies (see below for Project Selection Criteria);

5. Interviews and focus groups with project staff, partner agencies in the field and local participants/beneficiaries;

6. Participant observation in meetings and discussions with national policy makers in Nepal regarding a study commissioned by MAPPA on the creation of a National Medicinal Plant and NTFP Board;

7. Electronic survey of all project leaders (13) summarizing project activities, challenges and accomplishments, and on the value of affiliation with MAPPA;

8. Key informant interviews with the Program Coordinator and the Senior Program Officer.

It should be recognized that the observations made by the evaluation team are influenced by this sample of field sites, interviews and program/project documents. The bulk of data collection, as well as the visits to the three project sites, occurred during the month of January 2002.
2.3.2 Criteria for Project Selection

Three projects were selected from the MAPPA Small Grant project list for a project visit and in-depth assessment, using the following criteria for selection:

- At least one project from each of MAPPA’s three research themes;
- Projects had completed at least one year of their program cycle;
- A balanced representation of three distinct communities/regions.

Based on this set of criteria, the projects outlined in the following table were selected in consultation with the MAPPA Coordinator as case studies for the evaluation.

Table 1: Projects visited for evaluation

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Implementing Agency</th>
<th>Project Location</th>
<th>MAPPA Theme(s)</th>
<th>Planned start - Planned completion</th>
<th>Status (as of 03/02)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Community Based Sustainable Management of Medicinal Plants in Betul District</td>
<td>Indian Institute of Forest Management.</td>
<td>Bhopal Madhya Pradesh, India</td>
<td>1, 2, 3</td>
<td>May 26, 1999 - Nov 26, 2001</td>
<td>16th month out of a total 36.</td>
</tr>
<tr>
<td>4. Strengthening the Traditional Health Practices and Training in cultivation of Medicinal and Aromatic Plants to the women and Herbal Healers of Chittoor District, AP.</td>
<td>People's Clinic Trust, and the Herbal Folklore Research Centre.</td>
<td>Thirupati, Andhra Pradesh India</td>
<td>1, 3.</td>
<td>Dec 8, 1999 - Dec. 8, 2001</td>
<td>22nd month out of a total 24.</td>
</tr>
</tbody>
</table>

2.4 Limitations of the Evaluation

2.4.1 Evaluation Scope

Due to time and resource constraints, visits to each of MAPPA’s small grant projects was not possible. Given that only 4 of a possible 13 projects were visited for this evaluation, the extent to which project data can be extrapolated to reflect the program as a whole, is limited. In an attempt to address this limitation, an examination of the contribution of the small grant projects towards each of the program objectives was attempted by conducting a review of project documents and

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3 MAPPA Themes are (1) innovative conservation methods; (2) promote sustainable and equitable commercialization, and (3) improve options for safe and effective health care.

4 This project was visited by the Lead Evaluator (Carolyn Switzer) in December 1999, when she was working as a Centre Intern at the SARO office (a report is available). As such, a new project visit was not required, although follow-up correspondence with the Principal Investigator and the MAPPA Coordinator, as well as content analysis of any recent documents, was included in order to update the information to allow for it’s inclusion as a case study in the evaluation.
implementing a survey of project leaders. Nine of the 13 project leaders responded to the survey, resulting in a response rate of 69%.

2.4.2 Logistical Issues

The Canadian Department of Foreign Affairs and International Trade reported in January 2002 that Canadians should defer travel to Nepal due to the violence resulting from a political insurgency occurring throughout the country. Although the violence was reportedly aimed predominately at Nepalese government offices, police, security forces, and political leaders, three Canadian development assistance project offices were attacked in July 2001. The MAPPA project area, approximately 80 kilometres from Kathmandu, had been affected by the violence the week before the scheduled evaluation visit. Therefore, for safety reasons, it was decided that the evaluation team should avoid a visit to the field sites and that evaluation-related interviews would occur in Kathmandu where there was a stronger perception of safety. Project staff elected to invite project participants and local staff to Kathmandu for participation in evaluation focus groups and interviews. Also, on January 21, 2002 the co-evaluator visited the District Forest Office, Dhulikhel, (Kabhrepalanchok District) in order to interview two local project staff of SAFE Concern, six members of the local Nala Tukuche VDC, two district Forest Officers for Kabhrepalanchok District, and a Nursery Specialist at Dabur Nepal Pvt. Ltd. The Dabur Nepal Pvt. Ltd. is supplying the project with seeds, seedlings and technical assistance. In addition, 10 participants/beneficiaries from Dhunkharka VDC, Kabhrepalanchok district were interviewed by the evaluation team at SAFE Concern's office on January 23, 2002. Dr. Bhattarai had also visited the project 4 months prior to the evaluation in order to conduct monitoring of the project and therefore his report was considered by this evaluation as well.

2.4.3 Seasonal Limitations

Given that the evaluation visits occurred during India’s winter/dry season, demonstration gardens, nurseries and farmer’s fields in the Madhya Pradesh (with IIFM) and Uttaranchal (with SHER) projects were not producing a crop. As such, the evaluators were not able to witness the plants in cultivation. However, the team was able to view the roots in hibernation, seed saved from the previous year, and the dried, stored harvest from the previous year. In addition, the team met with participants and local staff and conducted focus groups and interviews related to the evaluation objectives.

2.4.4 Non-representative Beneficiary Input

Given the complexity of project sites, the diversity of stakeholders, implementing organizations and project objectives and the limited time allowed in each project site, it was not possible to use participatory methods for the evaluation design and implementation. Evaluation objectives and criteria were selected in collaboration with the Program Coordinator and the IDRC Program Officer, but did not include the perspectives of project leaders, staff or local beneficiaries.

5 Dabur-Nepal, a well-established medicinal plant based cultivation facility, is currently working in the field of medicinal plant seedling production and is well-equipped with greenhouses to produce millions of seedlings of desired medicinal plants.
Short field visits, a limited budget and a diverse pool of local languages in the project sites prevented the hiring of an external translator. As such, the Lead Evaluator was often dependent on translations provided by local project staff. Further, it is possible that a desire to continue participation in the project may have limited the opportunity for project participants to be forthcoming in their assessment of the project. Fortunately, at all three project sites, many local community members spoke either Hindi or Nepali and could therefore converse independently with the Co-evaluator, who is fluent in both languages.

Given that MAPPA projects visited during the evaluation had been in operations for less than two years, the evaluators elected to focus predominantly on the perceptions of the local project staff rather than those of members of the beneficiary communities. Also, the time and resource allocated for the evaluation did not allow for interviews with a random sample of project beneficiaries, or representative sample of respondents from various stakeholder groups. In two cases (Madhya Pradesh and Nepal) all local project staff, who served as local evaluation contacts were male. This considerably limited the ability to interview women during the evaluation and the evaluation participants were therefore predominantly male. In the SHER project in Dehra Dun, two lead researchers were women, which allowed for the opportunity to interview both male and female respondents in the field.

3.0 MAPPA Program Overview

3.1 Background

The MAPPA program builds substantially on research and partnerships established by a previous IDRC-supported program in the region – the IDRC Medicinal Plant Network (IMPN). The IMPN had been formed in 1994 and was designed as a network project with a small grant component. The first two phases of the IMPN focused on documenting and conserving MAPs, developing projects and initiating networking activities among the research partners (MAPPA Proposal, 1998).

The IMPN program had been somewhat successful in addressing issues of resource inventory and assessment and documenting information regarding medicinal plant resources (MAPPA Appraisal, 1998). However, a critical analysis of the IMPN revealed several gaps in its approach to networking, such as insufficient collaboration with other established organizations/activities in the region, and inadequate support to grassroots organizations. The IMPN review also provided an opportunity to identify a series of lessons learned, research gaps and emerging regional priorities.

Based on the knowledge of IMPN strengths and weaknesses, MAPPA was designed as a distinct initiative that would be more regional and collaborative in approach. As opposed to an explicit network, MAPPA was designed to implement a more strategic, focused and comprehensive approach to research issues in South Asia. For example, MAPPA continues to build partnerships between key stakeholders and organizations in the region, to facilitate effective information exchange and to enhance regional networking (MAPPA Proposal, 1998). The program places emphasis on building capacity of emerging institutions and encouraging the utilization of research results at local, national, regional and policy levels.

In order to incorporate the research priorities of partners in the region, consultations were held at the Role of Medicinal Plants, Industries in Rural Development and Biodiversity Conservation in India (December 16-17, 1997) and during the South Asian IDRC Research Partners meetings.
held around the *International Conference on Medicinal Plants* which took place in Bangalore in February 1998 (Gines, MAPPA Appraisal, 1998).

Several key areas requiring further research and support have been identified as a result of IDRC’s work in the region and were articulated in the MAPPA proposal (1998:9) and Liz Fajber's document, “IDRC and Medicinal Plants: Priority Issues and Research Needs” (March 1997). These can be summarized as:

1. **Conservation**: development of strategies for in-situ and ex-situ conservation based on community participation; sustainable propagation and cultivation methods; identification of rare and endangered species; document local/indigenous knowledge; facilitation of control and access to resources by local and indigenous peoples.

2. **Marketing and Employment**: impact of commercialization on local access to resources and use of MAPs; commercialization and sustainable harvesting; promoting long-term and equitable partnerships between the collectors/growers and users; standardization of production and development of quality control mechanisms; methods to ensure community/local benefits;

3. **Health, Safety and Efficacy**: improving the efficacy and safety of traditional medicine; recognition of complementary nature of different health systems and improve collaboration between local and modern medicine;

4. **Gender**: integration of gender and social analysis into research on medicinal and aromatic plants;

5. **Networking and Coordination**: facilitate networking, communication and collaboration at national, regional and international levels; support local practitioners/traditional healers associations; facilitate linkages and cooperation among various stakeholders such as local researchers, traditional practitioners, central government ministries; improve coordinated efforts, extend outputs/outcomes of MAP related research to policy makers.

### 3.2 MAPPA Objectives

The following program objectives were outlined in MAPPA’s original proposal to IDRC:

1. To support strategic research on community-based initiatives for genetic conservation and sustainable management of medicinal and aromatic plants;

2. To promote innovative resource utilization and management strategies involving local people, especially rural poor and tribals, to derive more equitable benefits from medicinal and aromatic plants and derived products;

3. To support strategic research on improving access to, and use of, medicinal and aromatic plants as a means of safe and effective primary health care;

4. To support better access to, better broader distribution and greater utility of information about medicinal and aromatic plants through networking and communication; and
5. To promote partnerships, capacity building and institutional commitment to sustainable use and production of medicinal and aromatic plants through enhanced regional cooperation, training and research in the South Asian region

3.3 MAPPA Modalities:

As a program of research, MAPPA employs three inter-linked modalities to achieve its programming goals:

3.3.1 Small Grant Program

The Small Grant Program constitutes the bulk of MAPPA resources. MAPPA solicits proposals from emerging research institutes, government organizations and private sector organizations, which address one or more of the three research focuses. As a ‘responsive’ program of research, proposals typically reflect national research priorities or needs expressed by local communities. A MAPPA Advisory Board, whose members have been agreed upon by SUB team members, selects projects through a competitive and transparent proposal review process.

The majority of small grant projects were funded in 1998 for an average duration of 28.5 months and seven of the 13 projects are either closed, or have received non-monetary extensions to conclude project activities and will be completed before the fall of 2002. As listed in Table 2, recipients of small grants from MAPPA have typically included non-government organizations, university-based research agencies, government research departments and to a lesser degree, private sector companies.

Table 2: Summary of Small Grant Recipients

<table>
<thead>
<tr>
<th>#</th>
<th>Institution name</th>
<th>Project Title</th>
<th>Country</th>
<th>Actual Commencement Date</th>
<th>Planned Completion Date</th>
<th>Duration</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>002</td>
<td>The Society for Himalayan Environment and Research (SHER)</td>
<td>Conservation &amp; Cultivation of Medicinal Plants in Mountain Areas of Garwhal Region</td>
<td>India</td>
<td>May 24, 1999</td>
<td>Nov 24, 2001 – C</td>
<td>24</td>
<td>23,775.00</td>
</tr>
<tr>
<td>003</td>
<td>Indian Institute of Forest Management (IIFM)</td>
<td>Community Based Sustainable Management of Medicinal Plants in Betul District, Madhya Pradesh</td>
<td>India</td>
<td>May 26, 1999</td>
<td>Nov 26, 2001 – C</td>
<td>24</td>
<td>26,021.00</td>
</tr>
<tr>
<td>005</td>
<td>Industrial Technology Institute (ITI)</td>
<td>Value Added Products from Medicinal Plants for Community Based Rural Development Program</td>
<td>Columbo, Sri Lanka</td>
<td>Sept 7, 1999</td>
<td>Sept. 7, 2002 – A</td>
<td>36</td>
<td>27,708.00</td>
</tr>
<tr>
<td>006</td>
<td>People’s Clinic Trust (PCT) and Herbal Folklore Research Centre (HFRC)</td>
<td>Strengthening the Traditional Health Practices and Training in Cultivation of Medicinal Plants to the Women and Herbal Healers</td>
<td>India</td>
<td>Dec 8, 1999</td>
<td>Dec. 8, 2001 – C</td>
<td>24</td>
<td>28,196.00</td>
</tr>
<tr>
<td>#</td>
<td>Institution name</td>
<td>Project Title</td>
<td>Country</td>
<td>Actual Commen t Date</td>
<td>Planned Completion Date</td>
<td>Duration</td>
<td>Amount</td>
</tr>
<tr>
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</tr>
<tr>
<td>007</td>
<td>Socio-Economic Agroforestry and Environment Concern (SAFE Concern)</td>
<td>Action Research on Medicinal Plants and Other Non-Timber Forest Products in Central Midhills Region, Nepal.</td>
<td>Nepal</td>
<td>Dec. 8, 1999</td>
<td>October 31, 2002 – A</td>
<td>36</td>
<td>28,196.00</td>
</tr>
<tr>
<td>008</td>
<td>Pakistan Forest Institute (PFI)</td>
<td>In-Situ Conservation and Regeneration of Temperate Medicinal and Aromatic Plants through Community Participation</td>
<td>Pakistan</td>
<td>June 15, 2000</td>
<td>June 15, 2003 – A</td>
<td>36</td>
<td>24,658.00</td>
</tr>
<tr>
<td>009</td>
<td>Indian Environmental Society (IES)</td>
<td>Development of Strategies for Production and Improvement of MAPs growing in the Tribal Belts of Southern Rajasthan.</td>
<td>India</td>
<td>Mar 24, 2000</td>
<td>Mar 24, 2002 – C</td>
<td>24</td>
<td>24,698.00</td>
</tr>
<tr>
<td>010</td>
<td>Herbs Production and Processing Co. Ltd. (HPPCL)</td>
<td>Study on Medicinal and Aromatic Plants Resources of Udaipur District, Nepal</td>
<td>Nepal</td>
<td>Jan 18, 2000</td>
<td>Jan 18, 2002 – C</td>
<td>24</td>
<td>26,265.00</td>
</tr>
<tr>
<td>011</td>
<td>Husein Ebrahim Jamal (HEJ) Research Institute of Chemistry</td>
<td>Indigenous Processing of Plant based raw material of Homeopathic Medicine by Local Communities in Pakistan</td>
<td>Pakistan</td>
<td>June 24, 2000</td>
<td>June 24, 2002 – A</td>
<td>24</td>
<td>26,315.00</td>
</tr>
<tr>
<td>012</td>
<td>Development of Biotechnology &amp; Environmental Conservation Center (DEBTEC)</td>
<td>Development of Sustainable Conservation and Management of Medicinal Plants in Laxmipur District, Bangladesh</td>
<td>Bangladesh</td>
<td>June 25, 2001</td>
<td>Decembe r 25, 2002 – C</td>
<td>18</td>
<td>25,200.00</td>
</tr>
<tr>
<td>013</td>
<td>Arya Vaidya Sala (AVS)</td>
<td>Development of Production to Consumption and Marketing Systems-based Strategies for the Sustainable Use of Medicinal Plants in the Western Ghats, Kerala</td>
<td>India</td>
<td>Septemb er 6, 2001</td>
<td>Septemb er 6, 2002 – A</td>
<td>12</td>
<td>22,800.00</td>
</tr>
</tbody>
</table>

### 3.3.2 Networking and Productive Partnerships

Related to Program Objectives 4 and 5, desired MAPPA outcomes include the creation of productive partnerships between institutions researching MAPs and government bodies regulating MAPs as well as improved access to and broader distribution of information regarding MAPs through networking.

Activities designed to enhance regional cooperation and improve information sharing include facilitating information exchange of methodologies and results and technologies between small grant recipients and other MAPPA partners; hosting workshops and consultations; and encouraging collaboration on research projects and cooperation on implementation of national agreements.
3.3.3 Commissioned Studies and National Consultations

Similar to the small grants in administration, the commissioned studies are more ‘targeted’ initiatives as they are deliberately planned and allocated to meet a specific purpose or research need of the program. MAPPA sponsored consultancies and internships were intended “… to address some program cross-cutting issues, such as impact of local level research on policy development, as well as evaluating lessons learned from the overall approach of the program” (MAPPA Appraisal, 1998).
4.0 EVALUATION RESULTS

Evaluation objectives are each addressed in the following section. Outputs for each evaluation objective include a discussion of the major achievements towards MAPPA’s programming objectives, identification of outstanding gaps and missed opportunities, and a highlight of potential recommendations or actions needed for either the remaining programming period or future phases of the program.

The following section reports on the first and second evaluation objectives by examining the progress made towards each of MAPPA’s programming objectives, provides recommendations regarding manners of operation, and documents the contribution of the research conducted via the Small Grant program towards those objectives. A breakdown of each of MAPPA’s objectives, the associated principle elements, the intended reach of each objective, the proposed activities intended to address each objective, and the desired outputs is provided in Annex 1. This table captures a summary of MAPPA’s intended research agenda, and serves as a tool for benchmarking progress made towards each objective.

The first three objectives put forth in the MAPPA proposal are implemented primarily through the applied research supported under the Small Grant program and match the three programming themes of:

- strategic research to develop innovative conservation methods,
- the promotion of sustainable and equitable commercialization, and
- the improvement of options for safe and effective health care.

In order to systematically report on the contributions of research supported through the small grant mechanism towards MAPPA’s overall objectives, the objectives, outcomes, missed opportunities and recommendations for each of the small grant projects, have been summarized in Table 4.

Following the project summary in Table 4, a narrative is presented which identifies broader methodological issues and highlights opportunities for scaling up under each of MAPPA’s objectives. Recommendations for changes in the direction and manner of operation for the remaining programming period or future phases of MAPPA are also provided. The recommendations are normative in that they serve to suggest new directions for each project that will aid in meeting MAPPA’s stated objectives. Each recommendation should be prioritized according to the realities of time, resource and capacity constraints during the planning for the next phase.
### 4.1 Small Grant Program: Summary of Project Contributions to MAPPA Objectives

#### Table 3: Summary of Project Contributions to MAPPA Objectives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Achieved Outputs</th>
<th>Outcome/ Contribution to MAPPA’s Objectives</th>
<th>Missed Opportunities/ Recommendations for Next Steps...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>002: The Society for Himalayan Environment and Research (SHER)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TITLE:</strong> Conservation &amp; Cultivation of Medicinal Plants in Mountain Areas of Garwhal Region (India); Planned Completion date: Nov 24, 2001 (Complete)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| To organize awareness camps for conservation strategy and traditional system of medicine (TSM) promotion. | • Ten ‘Ecocamps’ hosted in the project area and the targeted villages - all within the Govind Wildlife Sanctuary and National Park.  
• Participants - 226 including 15 women focusing on the economic and conservation importance of medicinal plants, sustainable harvesting and the potential of cash cropping as a source of income. | Awareness raising of the importance of conservation of MAPs and the potential of MAPs to contribute to sustainable livelihoods (1) | Recommendation:  
• Research the impact of awareness raising on conservation behaviours;  
• Document methods used/sources for promoted sustainable harvest limits/methods. |
| To develop and demonstrate cultivation model for selected medicinal plant species | • Three demonstration sites/test plots have been established at three altitudes – 2 sites are on land leased from locals or Temple committee; on the main site, land has been purchased.  
• A nursery, demonstration site, seed production and experimental plots for domestication and cultivation have been established. The focus is on large-scale production of mother plants of Aconitum atrox, Aconitum heterophyllum and Sausurea costus as a source of seed for distribution to villagers.  
• Compared the cost of production for potatoes (the predominant cash crop) with the production of aconitum atrox and heterophyllum and determined an improved rate of return for the cultivation of MAPs. | Development of production and cultivation methods... for selected key species (1, 2) | Involvement of marginalized groups in isolated communities in fragile ecosystems. Recommendation:  
• Although farmers are trained in mixed cropping of MAPs with food crops, the risk that marketable MAPs will displace subsistence food crops should be investigated.  
• Investigation is needed into the impact of cultivation on the market for wild MAPs by landless or marginalized farmers. With the established buyer, has the project increased collection of rare MAPs from the wild? |
| Agro-technological development and its extension through training program amongst the local people | On-going research and development activities include:  
• Collection of MAP germplasm from different localities and their maintenance in the demo site; Increasing the availability of MAPs through seed germination as well as vegetative propagation;  
• Development of cultivation models for several MAP species;  
• Development of suitable agro-technology including the effects of the following control parameters on seed germination: soil textures; depth of seed sowing; growth hormones; and the effect of hormones on stem cuttings and tuber cuttings (vegetative propagation). | Contribution towards sustainable use and equitable commercialization (2). | |
| To explore the possibilities of tie-ups with pharmaceutical industries emphasizing the need of 5% invest of sale in community development and medicinal plant conservation program. | • Establishment of a formal bipartnership – with a commitment of a reinvestment of 5% of sales in community development and conservation of MAPs. Company ("Maharashi Ayerveda") provides 50% of start up cost to farmer, if crop fails, 25% of expenses returned to company (25% assumption of risk). | • Implementation of formal “bipartnerships” between local communities and industry (2);  
• Institutional development to improve the rights of the growers as well as to provide improved market access (2);  
• Benefit sharing: support of MPs in livelihoods, guaranteed return from research to community (2). | Recommendation:  
• Follow up with studies to determine the impact of participation in program on income generation. Also, conduct an assessment of the risk associated with receiving input support from company in advance of production. |

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6 Information in this table is collected from a variety of sources, including project files, the Project Leader Survey, visits to projects: 002, 003, 006, 007

7 Numbers in parenthesis refer to MAPPA’s first three research objectives: (1) strategic research to develop innovative conservation methods, (2) the promotion of sustainable and equitable commercialization, and (3) the improvement of options for safe and effective health care.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Achieved Outputs</th>
<th>Outcome/ Contribution to MAPPA’s Objectives</th>
<th>Missed Opportunities/ Recommendations for Next Steps...</th>
</tr>
</thead>
</table>
| Gather information to assess the ecological and socio-economic status of medicinal plants in project area. | • Documentation of the traditional use of a large number of locally available medicinal plants used by the traditional healers (ethnobotanical studies)  
• Produced a list of MAPs available locally and of socio-economic importance.  
• Established a Herbal Healer Network that is used for ongoing documentation of the use of MAPs by traditional healers, who maintain a patient profile register recording the ailments, treatments and results.  
• Ongoing collection of MAPs for a herbarium to be maintained by the community.  
• Established a MAP Information Centre providing information on identification and use, trained and supported two trainees responsible for maintaining it. | • List of locally available and used medicinal plants, the parts used, harvest methods, and mode of use (1).  
• Awareness raising on available MAPs to be conserved and those that can be harvested (1). | Recommendation:  
• Explore options for formalizing an interconnected IPR/ABS mechanism that recognizes the intellectual property of local communities documented through ethnobotanical surveys.  
• Document local perceptions of species scarcity or abundance, threats to conservation and local conservation practices;  
Next step:  
• research the impact of commercialization on the local health care system especially on women and tribal groups. |
| Monitor and select five Medicinal Plants species with high local value and commercial demand. | • As per the local conditions (climatic and market), five medicinal plants species (Aonla/Indian gooseberry) (Phyllanthus emblica), mentha (Mentha arvensis), aswagandha (Withania somnifera), sanai (Mucuna pruriens), and dedawal were identified and promoted for cultivation with local farmers.  
• The cultivation initiative met with mixed success given that several species required substantial inputs of water for establishment in the first year, and the project area had been drought prone for two years. Returns from cultivation of mentha in the first year were adequate but failed in the second year given the lack of water. Other crops, such as Aonla (Phyllanthus emblica) require a longer establishment period before harvesting. Approximately 150 seedlings have been planted in degraded lands. Cultivation is therefore more an option with farmers who have facilities for water.  
• Marketing information provided good returns for Dedawal. | • Awareness generation on the need for conserving and harvesting systems for medicinal plants and other life forms for biodiversity importance (1). | Missed Opportunity:  
• The project did not directly incorporate the needs/perspective of women, the landless, or marginalized farmers, in that the crops selected required irrigation.  
• The drought prone nature of the project site should have been an early factor in the selection of plants (e.g. mentha (Mentha arvensis), requires heavy water) given that the area had been under drought conditions for 2 years. |
| Test and develop models of cultivating medicinal plants in the degraded forest areas being covered under JFM. | • Intention was to promote cultivation of medicinal plants in forest areas, but commercial cultivation of MAPs is not possible in the forest due to Government and Forest Department’s rules and regulations (not permitted under FCA 1980).  
• In-situ regeneration and enrichment planting in the forest areas was possible but cultivation could not be achieved. The project had a site selected, but had not begun regeneration planting. | | Missed Opportunity  
• Local legislation should have been thoroughly investigated prior to the design of the project.  
Next step  
• Focus on regeneration of threatened species in forested areas. |
| Determine impact of present conservation and harvesting systems on production and biodiversity status of medicinal plants. | • The intention was to “document the state of medicinal plants in local forest”: Established 10 monitoring plots in a local protected forest area to document the status of medicinal plants in their natural habitat. Baseline information includes species populations, density and seasonal growth rates of herbs, shrubs and trees. The plots are monitored three times per year in different seasons. One year of monitoring has been completed. | • Documenting population status of select medicinal plants in their natural habitat (1). | Missed Opportunity  
• The project monitored population status, seasonal growth rates but did not monitor impacts of conservation and harvesting compared to a control group.  
Next step  
• Researching sustainable harvesting of MAPs, both in wild and under cultivation, with training and participation of traditional healers and herb collectors. |
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Achieved Outputs</th>
<th>Outcome/ Contribution to MAPPA’s Objectives</th>
<th>Missed Opportunities/ Recommendations for Next Steps...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect and analyze information regarding survival, collection, marketing and potential for value added processing of medicinal plants cultivated and collected.</td>
<td>• Some data collected on the traditional methods of collection and storage of MAPs, but no distinction was made between methods for different species. A preliminary market study has been conducted identifying local and regional markets and market channels.</td>
<td>• Contribution to increased flow of information on trade and commercial activities to local people (2).</td>
<td>Missed Opportunities:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Improved detail on data collected with regard to survival, collection, and commercial activities to local people (2).</td>
</tr>
<tr>
<td>Recommend a holistic model for promoting cultivation of medicinal plants in degraded forests.</td>
<td>• 35 species of medicinal plants have been planted in the demonstration plot on degraded land that was used for training and awareness raising. • A forest plot was identified for in situ conservation in the first year, but regeneration and enrichment planting was not started. A model for cultivation of MAPs in degraded areas was recommended, but not in forests.</td>
<td>• Improved model for cultivation with irrigation available to farmers (1, 2).</td>
<td>Next Step:</td>
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<td>• The development of an enhanced model for regeneration of MAP populations in local forests in combination with sustainable harvest studies is recommended. Do not recommend cultivation model unless appropriate for drought conditions and low inputs.</td>
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**004: Canadian Centre for International Studies (CECI)**

**TITLE:** Development Methodologies for Sustainable Management of Endangered and High Valued Medicinal & Aromatic Plants Centre in Jumla District (Nepal);

**Planned Completion Date:** Dec. 7, 2001 (Complete)

| To develop criteria and indicators for sustainable harvesting of key medicinal and aromatic plants species; | • Methodologies for sustainable harvesting of selected MAPs in natural habitat and under cultivation have been developed; • Permanent experimental plots have been maintained in natural habitats in the community forests and in farmers’ fields at various altitudes between 2400 – 2800 metres. Plants were transplanted from their natural habitats to lower altitudes. Plots are used to document growth and survival rates, the effect of harvesting practices on regeneration (rotational, traditional, and partial); • Very good survival rate and regeneration at certain elevation | • Established sustainable harvest limits and conditions for four species (1). | Opportunity: |
| | | | • Very good opportunity for scaling up of project results and replication of project methodology for establishing sustainable harvest limits and incorporating the participation of local community members in the research process. |
| | | | • The project is also a good example of the complementary link between in situ and ex situ conservation strategies. |
| To introduce cultivation of the species in community forests and on private farms | • Four species were considered for further research, based on their importance in the local economy, extent of exploitation in the wild, increasing market demand, traditional uses, cultivation potential, and local level value-addition potential (Bhattarai, 2001a). These species were: Nardostachys grandiflora (Jatamansi), Neopicrorhiza scrophulariifolia (Kutki), Valeriana jatamansi (Sugandhawal) and Rheum austrole (Padamchal). • Conducted studies on the optimum soil conditions and yield per unit area for plants in the wild and with transplantation in fields under various treatments; • Phytochemical analysis revealed that high altitude medicinal plants have predominantly shown increased chemical contents (active principles like bitter principle, essential oil, etc.) when cultivated in considerably lower elevations. Further tests were conducted comparing the difference between natural and domesticated populations harvested in different seasons. • Best cultivation techniques identified for certain elevation; • It is anticipated that the survival and quality of high altitude MAPs will provide full method of cultivation in different altitude and climatic conditions in lower altitudes (community forest and private land) | • Valuable information provided on the effect of habitat change on the productivity and post-harvest regeneration potential of species (1). | Next step: examine the impact on production levels and phytochemical activity, not only of habitat change from wild to cultivated, but of various cropping systems (pure and inter-crops) (Bhattarai, 2001a). Given the cultivation recommendations, more detailed market research is also recommended. |
| | | | • Change in people’s attitude with the recognition that high altitude MAPs can be cultivated in lower altitude of CF and private land (1). |
| | | | • Community members are encouraged and have started cultivation of MAPs in their CF and private land (1, 2). |

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<td>To develop technological transfer and information dissemination methods to promote sustainable management practices</td>
<td>• Local users are actively involved in the research activities, especially data collection on MAP growth and yield, which ensures access to project results and efficient dissemination of technology to intended beneficiaries; • Interaction with the CFUG will improve the sustainability options for the project – the CFUG personnel have provided the community land and assistance to the project. • Independent farmers have also provided their land for experimental cultivation of MAPs – the technology will be diffused through their ongoing participation. • The project also documented the traditional management system used by MAP collectors and local users in managing wild resources and found that this is a substantial source of local livelihood.</td>
<td>• Increased awareness of differences in harvesting regimes for sustainable utilization of MAPs (1). • Contribution to MAPPA’s emphasis on development of locally based conservation strategies (1).</td>
<td>Recommendation: • More reflection on the process by which independent farmers were selected for participation; • Given that the collection of MAPs from the wild is traditional practice and an important livelihood source, the inclusion of commercial collectors and local users in providing practical knowledge on sustainable harvesting methods and management in the wild, is highly recommended (Bhattarai, 2001a).</td>
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**005: Industrial Technology Institute (ITI)**

**TITLE:** Value Added Products from Medicinal Plants for Community Based Rural Development Program (Columbo, Sri Lanka);

**Planned Completion Date:** Sept. 7, 2002 (Active)

| Standardization, improvement of quality, the production process and marketability of 6 Ayurvedic medicines currently produced by RITICOE | • Intended: Quality control of six Ayurvedic medicines. Actual: Quality control of the raw materials have been completed. Two sets of quality control parameters of 7 Ayurvedic products have been tested and recorded • Suggestions have been made to improve the quality of the products | • Provision of a fair price for medicinal plant products of RITICOE (2). • Development of strategies to understand local health care needs and develop approaches to improve delivery of safe, effective and affordable health care (3). | Recommendation: • Clearer incorporation and analysis of IPR and ABS issues related to product development and commercialization; • Establish and document clear mechanism for the involvement of traditional healers in the research process – both recommended in the Appraisal, but no evidence of their incorporation found to date in the reports. |

| Preparation of herbal tea, herbal soup and herbal porridge from medicinal plants found in the community. Ensure fair price for MPs and products of the community. | • Three herbal teas, two herbal soups and two herbal porridges have been formulated based on the results of the taste panel from six medicinal plants growing in the Ritigala area. They were analyzed for total proteins, fibre, fat and total ash and storage studies are in progress. | • Provision of employment and stable market for medicinal plant growers and local collectors (2). | Recommendation: • Analysis to reflect the conservation impact of the project. E.g. ensuring more effective and efficient use of raw materials in order to prevent waste. |

| Commence research to improve the marketability of herbal products from neem, aloe and tamarind; | • Several products from tamarind such as tamarind paste, sauce, jam, chutney were developed and demonstrated to selected women in the community to enable them to produce them and market. • Development of neem and aloe based products are underway | • Enhancement of the income to community from medicinal plants (2). • Link established between the conservation and production of medicinal plants, to local health systems and improved marketing of MP based raw materials (1, 3). | |

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8 Information for the ITI review was gathered primarily from the response provided in the Project Leader Survey and the Project proposal; no other documents were provided to the evaluation team.
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| **006: People's Clinic Trust and Herbal Folklore Research Centre (HFRC),**  
**Title:** Strengthening the Traditional Health Practices and Training in Cultivation of Medicinal Plants to the Women and Herbal Healers of District Chittoor in Andhra Pradesh (India)  
**Planned Completion Date:** Dec. 8, 2001 (Complete) |  
To document local health traditions and medicinal plants resources  
Phase I: Survey & documentation of anti-fertility herbal plants used in Chittoor district; demonstration garden with 150 medicinal plants  
Phase II: Documentation of local health traditions. | • Documented and reported the plants used in anti-fertility treatments;  
• Surveyed 400 remote villages;  
• Documented more than 1000 herbal therapies practiced by the rural people of Chittoor district;  
• Published books relating to the survey titled Tribal Medicine of Chittoor district, A.P & Grameena Vaidyamulo Oushadha Mokkalu. | • Capacity Building: establishment of Herbal Folklore Research Center (HFRC) as an NGO and Resource center on medicinal plants, cultivation.  
**Recommendations:**  
• Establish clear benefit sharing mechanism and IPR protocol regarding the future use of information collected during ethnobotanical surveys;  
• Research into the impact of domestication of wild species on biochemical activity. |
|  
To conduct research on the efficacy & validity of the plants and / or plant preparations selected from the best practices. | • 30 case studies documenting treatment practices of the district especially for Jaundice, snakebite etc were conducted in partnership with the PCT;  
• Published 10 case studies in the journal ‘Heritage Healing’;  
• Pharmacological tests conducted at IICT, Hyderabad on five herbal preparations used as contraceptives, with positive results for the efficacy of three preparations;  
• Excellent results in validation of three plants & one poly herbal preparation for diabetes conducted at Vel’ college of pharmacy Chennai.  
Two doctoral research scholars were guided under the Centre on (1) mapping of NTFPs (2) Pharmacognosy of some medicinal plants. Thesis on Pharmacognosy was submitted. | Contribution to the development of approaches to improve delivery of safe, effective and affordable health care (3):  
• As a result of the publication of 10 case studies and reporting them in many awareness camps conducted all over the district, the demand for herbal vaidyas in general increased.  
• The validation of 5 plants used in diabetes by the centre built confidence regarding the efficacy of herbal treatments. | **Recommendations:**  
• Continue standardization of traditional medicinal practices for key treatments;  
• Conduct an evaluation of the wider use of the Herbal Health Kits in meeting primary health care needs locally;  
• Improved participation of healers in the distribution of herbal health kits. |
|  
3. Conservation of medicinal plants and local health traditions ... through the promotion of:  
• Demonstration garden and nursery  
• Community and kitchen herbal  
• Domestication of wild plants for commercial cultivation by farmers. | • Samples of wild species collected during survey were maintained local Herbarium & seed bank;  
• Established a Demonstration garden with active cultivation of over 200 wild Medicinal plants used for training and awareness raising of students, farmers, researchers, forest department, SHG women, local village people and common public.  
• 50 varieties of MAPs are included in 2 VSS forest areas (in Sreenivasa puram & Sadasiva colony) established community gardens;  
• women in 15 hamlets are growing essential herbs in their kitchen herbal gardens (20 varieties);  
• Domesticated many wild plants for commercial cultivation by farmers.  
• Participated in rapid assessment of medicinal plants and its uses in Nalamalai hills range. | • Awareness on importance & use of medicinal plants (1);  
• Endangered & endemic plants were identified and strategies for development of the threatened species developed (1). | **Recommendation:**  
• Conduct an assessment of impacts of awareness raising and training of women in the use of MAPs on local health systems and status; |
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| Achieved Outputs | • Conducted 100 awareness campaigns in 50 villages  
• Women (30) SHGs are aware of uses of 50 medicinal plants for primary health care  
• Trained 30 SHG women in 15 herbal medicine (Herbal health kits) preparation for primary health care.  
• 10-15 health camps conducted in each hamlet.  
• Distributed herbal medicines for arthrits, foot cracks, health tonics, tooth powder etc to 50 villages.  
• Promoted medicinal plants nursery for distribution to farmers on commercial scale. | • Increased awareness in selected hamlets and increased small-scale cultivation of MAPs in kitchen herbal gardens and community gardens at VSS (1).  
• Women trained to address common health problems using indigenous herbal medicines (3).  
• Popularized cultivation of 6 varieties of medicinal plants among the farmers of A.P (1). | Recommendations:  
• Evaluate the impact of awareness raising – has it changed behaviors?  
• Train and involve traditional healers in the distribution of herbal health kits – avoid HFRC becoming viewed as medical practitioners. |
| Missed Opportunities/ Recommendations | To ensure participation & cooperation of Traditional herbal healers in primary health care by providing them training on medicinal plants and modern therapeutics. | | Recommendation:  
• Train and involve traditional healers in the distribution of herbal health kits – avoid HFRC becoming viewed as medical practitioners. |

**007: Socio-Economic Agroforestry and Environment Concern (SAFE Concern)**

**Title:** Action Research on Medicinal Plants and Other Non-Timber Forest Products in Central Midhills Region, Nepal.

**Planned Completion Date:** October 31, 2002 (Active)

To create awareness among local people regarding importance on medicinal plants and other NTFPs through education or training programs about conservation approaches, forest environment and biodiversity.

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| Achieved Outputs | • Two Village Development Committees (VDCs), Dhunkharka (1800m) and Nala Tukuche (1400m) located in Kabhrepalanchok district, have been included as project sites.  
• Four sets of training, two in each project site, were conducted on medicinal plants and other NTFPs by involving 110 participants.  
• Two study tours have been organized in order to raise awareness of the local people on the importance and sustainable use of MAPs (51 participants). | • Increased awareness of and capacity for the conservation and sustainable use of MAPs (1).  
• Increased awareness of conservation of locally threatened species like *Xanthoxylum spp.*, *Taxus baccata*, etc. (1). | Missed Op: The proportion of women participants in these training programs was comparatively low (13%)  
Recommendation: conduct a comparative analysis of two case studies reflecting on the defining characteristics of each community and the results achieved in each. Use this information to more strategically design future phases to better meet the needs of each community.  
Opportunity: Very good opportunity for replication of training curriculum in similar projects. |
| Missed Opportunities/ Recommendations | To develop simple methodology in increasing the production of medicinal plants and other NTFPs to meet increasing demand of raw materials by adopting sustainable harvesting regimes. | | Recommendation:  
• Conduct research comparing harvest impacts for transplanted/domesticated species under cultivation, and those collected from the wild (see the work of CECI). |

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| To plant medicinal plants on community forests, leasehold forests and private lands. | • Two Nurseries have been established, one in each project site involving local people with a view to grow valuable seedling of medicinal and other NTFP species that are suitable for plantations. Both the nurseries are in full operational stages by producing approximately 10 000 seedlings of different species that are suitable in different climatic conditions. These nurseries are supplying the planting materials in the community forests, government forests and private lands in the project sites.  
• The nursery practice with Cinnamonum tamala has been very successful in the Nala nursery. Although the Dhunkarka nursery had limited success in the production of Cinnamonum tamala, the seedlings transplanted into community forests and farmers’ land have demonstrated desired acclimatization;  
• The nurseries demonstrate a higher survival percentage of seedlings since they are given an ideal environment for hardening off.  
• Local people have found it easier and more convenient to plant seedlings.  
• Buy-back mechanism: the project has coordinated an informal commitment from HPPCIL to buy the locally produced MAPs in raw and semi-processed forms.  
• CFUGs and local farmers have begun planting seedlings on marginal lands  
• Co-ordinated on behalf of the FUGs, with the seed Cooperative of Kavrepalanchok and Sindhupalchok district in order to obtain good quality seeds and seedlings of various NTFPs that are of local people’s demands. | • Development of methods, options and strategies for *in situ* and *ex situ* conservation and cultivation of medicinal plants (1),  
• The project relates to biodiversity conservation, forest protection, development of NTFP resources in the community forests and inclusion of NTFPs as a cash crop in private land (1, 2).  
• CFUGs are exploring the possibilities of enterprise development based on the resources already available in the VDCs (2). | • Documentation of unrecorded information on traditionally used MAPs; Assessment of the demand and supply position of different MAPs.  
• Drug market survey carried out in Peshawar, Rawalpindi and Lahore markets and data collected during survey is being compiled to assess market potential of different medicinal plants  
• Demand and supply position of different medicinal plants has been determined.  
• Overall assessment of market study has been accomplished (1).  
• Intended to conduct an eco-geographical survey for the identification of representative areas with significant species diversity – not mentioned in Project Leader survey. | • CFUG members are interested in learning more about the purpose of MAPs, this could therefore be included as a component in the training package.  
• Close coordination with other organizations like Singhadurbar Baidya Khana, Herbs Production and Processing Company Limited (HPPCIL), local Seed Cooperatives etc, which work in the field of Non timber Forest products and medicinal plants.  
• Expected to develop enterprise by increasing production of NTFPs through ex-situ and in-situ conservation towards the end of the project. |
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<td>Experimental cultivation of medicinal and aromatic plants at different locations; Development of agro-technical packages through ex situ cultivation by farmers/communities to ensure sustained supply for local use and export.</td>
<td>• Demonstration plots have been established at three sites for trials in farmer's field; • Seed of three marketable drug species e.g. Nigella sativa, (black-cumin), Carum copticum (bishop's-weed) and Lavetra kashmiriana were sown in demonstration plots. • Regeneration plots established at Burban (2800 m elv.) where 4 rare/endangered medicinal plant species were planted. At present germination and sprouting of various species at different location are in progress.</td>
<td>• Contribution to sustainable use and production of rare and endangered medicinal plants (1); • Improved methods for regeneration and propagation determined (1).</td>
<td>Next Step: • In situ conservation areas will be established as a source of seed multiplication and availability of propagation material for bio-medical research. • Development of domestication and propagation techniques will lead to ex situ cultivation methods that will be promoted as pilot scale cultivation by communities and farmers on private land.</td>
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| Training of 10-20 local communities in pilot scale cultivation and post harvest care. | • Demonstration plots will provide a training platform for local communities in due course of time | Training and capacity building of local community members through demonstration sites; | Next Step: Training of local communities of the project area will be imparted during second year of the project |

| Standardization of the existing methods of collection, garbling, drying, storage, and packing used by local users and drug manufacturers; | No information provided on this objective. | |

| 009: Indian Environmental Society (IES) | TITLE: Development of Strategies for Production and Improvement of MAPs growing in the Tribal Belts of Southern Rajasthan (India) | Planned Completion Date: Mar 24, 2002 (Complete) | |

| To identify, prioritize and document key MAPs used by rural and tribal people to meet their medicine, food and other needs; | Documentation of locally available MAPs and their traditional therapeutic uses through field interviews of local herbal medicine men. | Documentation of local perceptions of available MAP resources; list of medicinal uses (1, 3) | Missed Opportunity: • The progress report provides only a summary list of the locally available MAPs and their uses, no mention was made of their conservation status, or the associated traditional conservation methods. Also, the progress report did not provide information on local priorities (economic or health) for specific species prior to conducting further research. Recommendation: • Explore options for formalizing an interconnected IPR/ABS mechanism that recognizes the intellectual property of traditional healers. |

<p>| • To identify and document the bio-chemical and pharmaceutical nature of select MAPs • To improve the pharmaceutical quality of MAPs under cultivation; • To develop cultivation methodologies and commercialization of MAPs. | Documented detailed local medicinal uses, morphological characteristics, chemical/mineral composition, production requirements, post-harvest and storage techniques for two species – chlorophytum borivilianum, (‘rare’ in the Red book of Indian Plants) and withania somnifera. Growth experiments were conducted for withania somnifera. | Intended contribution to MAPPA’s objectives: • Supporting strategic research on traditional medicine systems especially in the areas dominated by the indigenous communities (3). | Missed Opportunity: For withania somnifera, growth experiments were conducted but no mention was made of the control or experimental parameters, or the transfer of information to local community members. Also, no information was provided on how/why these species were selected for detailed study. |</p>
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| • To understand perception and knowledge of local community about MAPs and their uses over time;  
• To document the harvesting, conservation practices followed by the local people and to develop improved harvesting and conservation techniques;  
• To develop better storage and processing techniques and their popularization through training and awareness. | No outputs towards these objectives were mentioned in the progress report. | Intended contribution to MAPPA’s objectives:  
• Sustainable use and conservation of MAPs (1);  
• Improved options for safety and efficacy of traditional medicine (3). | Comments:  
The Proposal Appraisal outlines a number of key recommendations that do not appear to be incorporated into the project to date, according to the information provided in the progress report. These include: “the inclusion of a participatory planning exercise to incorporate the priority of the local communities”; and “clear mechanisms for involvement of the traditional healers in the research process”.  
The project suffers from the ‘monumental effect’ of attempting to accomplish too much with a small grant. The progress report provides very little discussion of methodology, lessons learned, synthesis of findings or outcomes, and references for the literature review. It is assumed that these elements, and progress towards the last three objectives or their limiting factors will be discussed in the forthcoming final report. |

010: Herbs Production and Processing Co. Ltd. (HPPCL)  
**TITLE:** Study on Medicinal and Aromatic Plants Resources of Udaipur District, Nepal.  
**Planned Completion Date:** January 18, 2002 (Complete)  
• To assess resource availability, distribution, use and trade of MAPs in the various ecosystems of the district (using a collection – marketing chain analysis approach)  
• To assess MAP resources in 10 community forests and work on the introduction of commercially valuable MAPs in those forests.  
• Survey of 11 community forests and preparation of a local NTFP inventory – examined the dominant forest tree components and other under-story plants with their distribution frequency.  
• Information on MAPs available in eleven CFUG and general information at District level is available.  
• Established a MAP nursery to provide MPs for plantation in the 11 community forests – not successful in providing for forests, but for private land/farms  
• Established community forest-based nurseries in 3 forest areas (none were successful in providing plants to CFs) (Bhattarai, 2001b:5). The District Forest Office Campus nursery was successful in producing 1000 seedlings of Cinnamomum tamala for planting in CFs. The project met with mixed success in establishing MAP nurseries for production of MAPs specifically for planting in CFs (Bhattarai, 2001b)  
• Dissemination of knowledge on NTFPs including MAP management and sustainable utilization for benefit maximization at community level (1).  
• Increased information of MAP resources in the district (1).  
• Information of the general ethnobotany of the district including the role of local plant resources in the health care system (3).  
• Selection of appropriate seedlings for CFs and distribution of seedlings for planting in CFs needs improvement  
• CFUG members are interested in learning more about the purpose of MAPs not just as providers.  
• Seedlings should be developed locally, rather than shipped in from outside of the district (Bhattarai, 2001b: 6)  
Missed Opportunity:  
• Established a MAP nursery to provide MPs for plantation in the 11 community forests but providing only species appropriate for cultivation on farms and private land (Bhattarai, 2001b:4)
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| Conduct effective demonstration and training programs for the Forest User Group (FUG) members and collectors on MAP issues to increase their capabilities in the identification, management, sustainable harvesting, and marketing of commercially important MAPs. | • Basic training (one week) provided to 125 CFUG members from 3 localities on various aspects of NTFPs and MAPs, in cooperation with the District Forest Office (good curriculum development – considered the immediate needs of the CFUG members);  
  50 local MAP collectors from all over district were trained on identification, propagation, and sustainable harvesting techniques;  
  MAP traders were provided with training on important commercial MAPs in the district, the potential of local level value addition, end product uses and other trade and marketing information;  
  Approximately 50% of participants were women; one CF was operated entirely by women. (Bhattarai, 2001b).  
  The CFUG members representing Trisakti CF located at Rauta VDC, Udaipur district, during the last phase of the project activities have formed a group known as Sanjawani Jadibuti Samrakshan Samuha (which literally means Sanjawani Medicinal Plant Conservation Group). The aim of the ‘group’ is to create awareness among the villagers regarding the conservation of medicinal plants in their natural habitat and practicing sustainable harvesting. The idea developed during the MAPPA project-training program. | • Awareness raising and local capacity building for community members regarding sustainable management of MAPs (1).  
  • Partnerships established with local GO (Forest Department) (1). | Recommendation:  
  • Inclusion of an orientation and practical class on the multiplication, cultivation, sustainable harvesting, management and other aspects of Cinnamomum tamala involving other growers should be encouraged. (Bhattarai, 2001b:6) |
| Encourage selected community forest user groups towards the cultivation of important MAPs in their forests providing them with necessary demonstration, training, other technical assistance, market guarantee for the produce and planting materials. | • Conducted a detailed market study of MAPs including – inventory of MAPs identified the major species and the annual trade volume of MAPs from the district, identify the trade route, major challenges within the market, documented the market chain (Thapa, 2001);  
  HPPLC offered a buy-back guarantee for farmers’ MAP produce;  
  11 CFUGs started cultivation of selected MAPs in their respected CF - Sapindus mukorossi and Cinonmum tamala have been planted in one CF;  
  11 CFUGs are trained in sustainable management of MAPs and practicing learned skill in managing the resource.  
  Impact from training: initiation of an essential oil distillation facility by one trainee – with technical and marketing assistance from HPPLC. | Informal buy-back arrangement between buyer and producer established (2).  
  Awareness raising and local capacity building for community members regarding sustainable management of MAPs (1). | Recommendation:  
  • Synthesis and reflection on the process of establishing a buy-back mechanism and analysis of the potential for a formal biopartnership;  
  assessment of socio-economic impact of partnership on local participants including women and marginalized farmers. |

011: Husein Ebrahim Jamal (HEJ) Research Institute of Chemistry  
**TITLE:** Indigenous Processing of Plant based raw material of Homeopathic Medicine by Local Communities in Pakistan  
**Planned Completion Date:** June 24, 2002 (Active)  

Prioritize the most commonly used homeopathic medicines in Pakistan and identify the herbal ingredients in each. | • An extensive literature review was conducted for all 50 plants and their potential for safety and toxicological properties were assessed.  
  Four plants were selected for the preparation of homeopathic medicines based on their availability as determined through a field survey conducted in Northern Pakistan. | The project contributes to enhancing biodiversity-based livelihoods through income generation rather than pure ethnobotanic research or bioprospecting (2). | Missed Opportunity:  
  • Methods used for the field study were not discussed in technical report. |
| Select the genuine and best locations of plant materials required. | • No information provided on this objective in Year One Project Technical Report. |  |  
| Develop guidelines for sustainable harvesting of prioritized species | • No information provided on this objective in Year One Project Technical Report. |  |  

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<td>Develop simple norms for processing standardized plant materials.</td>
<td>• Plant materials for each formulation were collected or identified; initial extraction and bottling were carried out in controlled conditions using standard phytochemical techniques.</td>
<td>Improved the efficiency of the production/ extraction process (2).</td>
<td>• Norms for manufacturing have been developed and have been pilot tested, but have not yet been shared with local communities.</td>
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<td>Transfer the composite technologies to interested local communities.</td>
<td>• The technical report reveals that the toxicological studies and manufacturing methods will be published and patented files in Pakistan. Correspondence reveals that the local communities will have the first right to utilize the technology in their manufacturing practices, but will not have the right to lease the process to other parties. A legal document for this purpose will be drafted and signed between HEJ and community representatives.</td>
<td>Alternative ‘biopartnership’ example for technology transfer and benefit sharing (2).</td>
<td>Recommendation: The process by which communities and individual members are selected for participation is not clear. However, if successful, this partnership strategy could be replicated in other field sites.</td>
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<td>To document the indigenous and traditional knowledge specifically related to use of backyard home gardens both as a source or raw materials and primary health care. To motivate and extend the cultivation in backyard home gardens to the rural communities for their new source of income.</td>
<td>• Documentation of the traditional use of a large number of locally available medicinal plants used by the traditional healers (ethnobotanical studies)</td>
<td>Documented local and indigenous knowledge (3); Cultivation will increase local availability of medicinal plants for use in local health care and for income generation by sale in the market (2, 3).</td>
<td>Recommendation: Explore options for formalizing an interconnected IPR/ABS mechanism that recognizes the intellectual property of local communities documented through ethnobotanical surveys.</td>
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<td>To develop a list of Critically Threatened Local Medicinal Plant in the village and raise awareness among the local communities.</td>
<td>• Project Leader Survey does not mention whether or not a list of Critically Threatened Local Medicinal Plants has been generated. • Through training and awareness raising campaigns, the project has substantially motivated community members to cultivate medicinal plants.</td>
<td>Assumed impact that domestication and cultivation will contribute to the conservation of biodiversity (1).</td>
<td>Recommendation: Assess the impact of awareness raising in terms of an associated change in behaviour;</td>
</tr>
<tr>
<td>To develop a cultivation manual based on experience and documentation of local plants.</td>
<td>• DEBTEC published a Handbook on Medicinal Plants, which will provide technical assistance in the cultivation of commercially important medicinal plants.</td>
<td>Assumed impact that domestication and cultivation will contribute to the conservation of biodiversity (1).</td>
<td>Recommendation: Assess the socio-economic impact of cultivation on marginalized and landless groups in the project area.</td>
</tr>
</tbody>
</table>

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**012: Development of Biotechnology & Environmental Conservation Center (DEBTEC)**

**TITLE:** Development of Sustainable Conservation and Management of Medicinal Plants in Laxmipur District, Bangladesh

**Planned Completion Date:** December 25, 2002 (Closed)

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10 Only the Project Proposal and Proposal Appraisal were made available to the evaluation team. Data is therefore based on the responses collected from the Project Leader survey.
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Achieved Outputs</th>
<th>Outcome/ Contribution to MAPPA’s Objectives</th>
<th>Missed Opportunities/ Recommendations for Next Steps…</th>
</tr>
</thead>
<tbody>
<tr>
<td>To develop a model program of sustainable medicinal plants production and conservation strategy for nationwide replication and expansion.</td>
<td>• Not yet complete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To develop a model relationship between rural communities and medicinal plants industry in ensuring the markets for the raw materials.</td>
<td>• Not yet complete – next step is to focus on market research.</td>
<td>Ensuring equitable sharing of benefits through the establishment of biopartnership (2).</td>
<td>Recommendation: DEBTEC staff would benefit from visiting and discussing the model utilized by the SHER project.</td>
</tr>
<tr>
<td>To influence national policy on medicinal plants conservation based on the success of this project.</td>
<td>The project sponsored a national workshop for GOs and NGOs to dialogue. This, in addition to the publishing of the workshop and several booklets, has contributed to the selection of Medicinal Plants as the theme for the National Tree Fair, and the establishment of a committee for policy and legislation on MPs.</td>
<td>Contribution to national policy dialogues, increasing institutional and government commitment to medicinal plants.</td>
<td></td>
</tr>
</tbody>
</table>

**013: Arya Vaidya Sala (AVS)**

**Title:** Development of Production to Consumption and Marketing Systems-based Strategies for the Sustainable Use of Medicinal Plants in the Western Ghats, Kerala (India)

**Planned Completion Date:** September 6, 2002 (Active)

1. **To locate selected species of medicinal plants in their natural habitat.**
   - Development of research capabilities in authentic identification and propagation of medicinal plants.
   - In situ biodiversity assessment (1).

2. **To establish a germplasm bank of their provenances and document their morphological characteristics.**
   - Organized a live collection of several provenances of the 20 species studied for reference and further research and supplies of their genuine parts for medicine preparation and evaluation.
   - Conservation of live specimens; made available supplies of their genuine parts for medicine preparation and evaluation (1).

3. **To identify markers through pharmacognostical studies of their parts of medicinal use.**
   - The small-scale enterprises involved in processing crude drugs will use the results extensively to identify genuine plants/plant parts and thereby eliminate the risk of adulteration. The beneficiaries will include medicine manufacturers whose supplies of genuine plants of known origin will stabilize and farmers for whom a new opportunity to improve their income will unfold. The Government will be immensely benefited in pushing its policy ‘health for all’ and in enlarging export opportunities.
   - Cultivation of medicinal plants in agroforestry (1, 3).

4. **To evolve techniques for their propagation**
   - Standardized methodology on agro-forestry inventions for multiplication of medicinal plants as well as their cultivation in forests. Information will be shared with local foresters in order to better inform their biodiversity management and regeneration programmes.
   - The project will be a model and a catalyst to researchers on a neglected or overlooked area in the promotion of medicinal plants determining their correct identity and propagating them (1, 2).
   - Recommendation: Good opportunity for scaling-up of results around results of cultivation and extension work. The strengths and weaknesses of the ABS approach taken by the project (MOU developed with the cultivators) will provide valuable lessons to other projects.

5. **To develop models for onfarm cultivation and to draw up recommendations for their conservation and regeneration in forests.**
   - The farmers will use the propagation techniques developed in the projects to cultivate the plants in their fields and foresters will be in a position to make use of the information generated in their biodiversity management and regeneration programmes.
   - The project is addressing the shortage of raw materials by recommending appropriate cultivation strategies (1, 2).
   - The project has contributed substantially to the field by building a long-term relationship between growers and users of medplant materials for developing a sustainable supply system.
4.2 MAPPA Objective #1: Conservation and Sustainable Use

The first MAPPA objective is “to support strategic research on community-based initiatives for genetic conservation and sustainable management of medicinal and aromatic plants”. The principal components supported/highlighted in the objective include research contributing to ‘genetic conservation’ and ‘sustainable management’ of MAPs.

As summarized in Annex 1, the activities planned in the proposal to meet this objective, included:

- Assessment of range and distribution of species for selected major eco-geographic regions in South Asia;
- development of sustainable harvesting and production methods... for selected key species
- development and implementation of local biodiversity monitoring practices;
- development of methods, options and strategies for *in situ* and *ex situ* conservation and cultivation of medicinal plants;
- development of a sustainable conservation and use strategy balancing the environmental priorities with minimum domestic and commercial demands (Proposal p.13-14)

Major anticipated outputs with regard to the conservation of medicinal plants included:

- Methods, options and strategies for sustainable use and equitable management of MAPs
- Manuals, guidelines for sustainable harvesting of prioritized species
- CAMP based prioritization of MAP species for research
- Cultivation technology and quality plant materials production of priority species;
- Assessments of resources distribution and use of MAP resources in key eco-systems
- Research information on genetic improvement strategies;
- Training of local harvesters, resource managers and researchers in sustainable harvesting techniques
- Local national and regional strategy, options and policy information for sustainable conservation of MAPs
- Gender based differences and benefits in MAP based activities and research strategies to address them

In order to assess the progress to date of MAPPA supported research in meeting the objective related to genetic conservation and sustainable management, an examination of the degree to which research has produced anticipated outputs is presented below. Discussion is oriented around key elements of:

- Assessment of species distribution;
- Sustainable harvesting;
- CAMP based prioritization; and
- Cultivation and production technology.

4.2.1 Assessments of Species Distribution

In many of the MAPPA project areas, key community members have considerable knowledge in regard to conservation-related aspects of medicinal plants, such as their distribution, abundance, ecology and common methods of harvesting. The documentation of this local TEK constitutes a substantial contribution of projects towards the assessment of species distribution, range and threat status. However, this has not been accompanied by equal advancements in scientific knowledge on species distribution, genetic diversity or responses to harvest pressure for high priority species. The primary information collected by the majority of MAPPA supported projects is focused on capturing a static snapshot of species present in the project area, and in many cases, local perceptions of species distribution.
Due to the early stage of research, MAPPA’s program of research has therefore yet to contribute substantially towards a comprehensive understanding of status changes in species diversity, or genetic diversity of MAPs in the major eco-geographic regions of South Asia. In order to meet this objective in the future, MAPPA should explore the technological and/or capacity barriers to the use of field assessments of species distribution. Once these are addressed, MAPPA can improve its support for research that interfaces the applied ecological approaches with the knowledge and expertise of local resource-users. MAPPA should also encourage more participation of local communities in resource assessments and in community-based monitoring systems, as this could generate enthusiasm for communities to adaptively manage and conserve resources. By increasing support for basic ecological research and linking with results obtained from local perceptions and priorities, MAPPA can improve its contribution to the field by scaling-up results to set evidence-based conservation priorities, and design appropriate management strategies.

**Project Contributions**

Project examples include the HPPLC project, in which researchers conducted a survey of government officials, community leaders, CFUG\(^{11}\) members, local herbal healers, collectors, traders and local villagers in order to prepare an inventory of MAPs in 11 community forests in Udaipur district of Nepal (HPPCL, 2001:5). The survey was used to provide an estimation of distribution frequency of the dominant forest tree species and other under-story plants that were considered to have medicinal properties (HPPCL, 2001, Annex 1:4). As a preliminary survey, the data captured reflected general observations regarding the presence of species, and classified species according to the categories of “rare, occasional, less frequent, frequent and most dominant”. However, the final report of the project does not provide a clear definition of distribution/population rates for each of these categories, or the methods used to assign them.

Several other projects (HPPCL, HFRC, CECI, SAFE Concern, AVS) have conducted inventories of uncultivated MAPs present in their project areas. Data collected for these inventories has predominantly come from surveys of local community members, community leaders, CFUG members, local healers, NTFP collectors and traders in order to determine the presence of MAPs. Fewer inventories discern between perceived levels of abundance and scarcity. These inventories range in the level of detail collected for each species, but often result in a list of MAPs present and/or in use in the region, the plant parts harvested, local harvesting methods, and the associated traditional knowledge regarding their medicinal use. Less common has been the systematic documentation of the local conservation behaviours, boundaries and beliefs surrounding various medicinal plant species. Where inventories reflect data collected on species abundance or scarcity using scientific methods of estimation, it is typically retrieved from secondary information.

There are also project exceptions of localized assessments that should be noted. The IIFM project in MP, in cooperation with the local Forest Department, has established several monitoring plots in a protected forest area to document the status of medicinal plants in their natural habitat. Baseline information includes species populations, density and seasonal growth rates for herbs, shrubs and trees found naturally in the forest. The plots are monitored three times per year in different seasons. One year of monitoring has been completed. In order to establish the conservation status of key species, CECI project staff also conducted a detailed assessment of

\(^{11}\) Community Forest User Group (CFUG) is recognized by the Government of Nepal as a legally constituted community based organization (CBO) that is registered with the Forest Department (FD) and is authorized to manage a designated forest land which has been handed over to it by the FD within the framework of an operational plan.
plant distribution and habitat characteristics in the research sites using informal interviews with local people, aerial photographs, topographical maps, published material and personal observations.

1.1.1 Sustainable Harvest

The development of guidelines for the sustainable harvest of selected key species was listed as a prioritized activity under the first objective in the MAPPA proposal. Several projects have included the objective of developing criteria and indicators for sustainable harvesting of key medicinal and aromatic plants species (CECI) and/or transferring this knowledge to local communities (SAFE Concern, IIFM). Project examples include:

• The SAFE Concern project in Nepal has met with some success in developing sustainable harvesting methodologies for select high value species such as Taxus wallichiana, Timur and Chiraito. These have included low-input and appropriate technologies for harvesting both wild and domesticated species under cultivation. Project staff continue to monitor the regeneration rates associated with various harvesting regimes for species planted in community forest areas and are anticipating the development of additional technologies for other high-value species. They have also successfully raised awareness of the need for sustainable harvesting regimes amongst local community members.

• The CECI project in Nepal also focused a substantial proportion of project activities on developing criteria and indicators for sustainable harvesting of key medicinal and aromatic plants species. Plants were transplanted from their natural, high altitude habitats to permanent experimental plots in both natural habitats in the community forests and in farmers’ fields at various altitudes between 2400 – 2800 metres. The plots are used to document growth and survival rates, and the effects of various harvesting practices on regeneration (rotational, traditional, and partial). The project has been one of the most successful in providing valuable information on the effect of habitat change on the productivity and post-harvest regeneration potential of species. Researchers have also collected biological samples from different habitats and under different harvesting regimes for chemical analysis in order to determine the impacts on biochemically active compounds (CECI 2000).

• The HPPCL project, also in Nepal, had the objective of training members of the Forest User Group (FUG) and collectors on MAP issues including sustainable harvesting methods, although the methods used to determine the sustainable harvest methods/limits are not clearly outlined in the reports for the project. Although HPPCL conducted field investigations and studies with the participating CFUG members in order to assess the present extent and the methods of harvesting, the methods for establishing new and sustainable limits and methods were not presented in the report (HPPCL, 2001:5).

• The IIFM project staff have documented local traditional ecological knowledge regarding ‘low-impact’ harvesting, and are supporting its reintegration into the practice of MAP/NTFP collectors and herbal practitioners through training sessions and by printing the instructions in the local language on identification cards for the members of a local herbal healers network. Although the project has identified a unique mechanism for training and technology transfer of low-impact harvesting methods, the methods being recommended by the project have not yet undergone testing and verification prior to their transfer. The sustainable harvesting methods, although intuitively logically, are applied to all species and include such generic recommendations as harvesting seeds and leaves only when they are mature, and not in the
dry season. Other recommendations, such as harvesting a maximum of 50% of the bark or tubers should be verified in field trials for specific species prior to their promotion. The project is using forest monitoring plots to document population and growth rates for select species in the wild, but is not recording the impact of specific harvest regimes or other interventions on regeneration and reproduction. Ideally, the project would compare an undisturbed control plot with plots testing various harvest regimes for a period of three years. There is potential for this project to learn substantially from the methodology employed by the CECI project.

Several other projects (HPPCL, IIFM, HFRC and HEJ) have neglected to document the methods used or sources for the sustainable harvest limits/methods they are promoting. There is a concern that projects may be promoting generic recommendations for harvest limits, without considering the full range of necessary species-specific information. This would typically include “… knowledge of reproductive and population ecology; distribution and abundance; collection practices and their impacts on replacement and recruitment; and effects of habitat disturbances other than harvest” (Leaman, et al, 1999. Section 2:14).

**Recommendations:**

It is recommended that the promotion of sustainable harvesting methods be supported by either primary or secondary evidence of harvest impact studies based on either new research, or testing of traditional harvest regimes. For uncultivated species, the program should target projects with the capacity to conduct small-scale in situ experiments, with the participation of local collectors, in order to determine the effects of various harvesting regimes on specific species. With a synthesis of results grouped according to eco-geographic region and/or species, general guidelines on intensity of harvesting and other management techniques will emerge. Collaboration between MAPPA partners could focus efforts towards the publication of collective outputs such as manuals and guidelines for sustainable harvesting of prioritized species in key eco-geographic regions.

### 4.2.2 Conservation Assessment and Management Planning (CAMP)

Conservation Assessment and Management Planning (CAMP) is a collaborative method for gathering information and producing ‘best-guess’ assessments on observed or predicted threats to individual species or taxa (Leaman, et al. 2000: Section 2). It accomplishes this by “…bringing together field experts and facilitating consensus on the IUCN Red List criteria in many situations for which sufficient data do not exist.” (Leaman, et al. 2000: Section 2:12). As a tool promoted by MAPPA, the use of the CAMP methodology was intended for application individually by a select group of MAPPA small grants projects, and at a national scale, through its employment at regional consultations in Bhutan, Nepal and Pakistan.

Several projects have proposed the use of CAMP as a preliminary tool to identify priority MAP species to be included in the project, including:

- **CECI:** involved secondary and primary sources, and included the participation of local MAP users, collectors, producers, traders and health service providers. Participants provided information on abundance, distribution (rare, endangered and threatened), local uses, and economic value.

12 These methods are discussed in detail in the first case study of this report.
- **HPPCL**: conducted a CAMP exercise in order to collect baseline information for selected MAP species in the project design phase. The exercise revealed vegetation types, dominant tree and undergrowth plant species, and common commercially viable MAPs found in the wild.

- **IES**: the IES proposal appraisal indicated that “…the data collection and species prioritization methods will be based on the concepts of CAMP, which will be carried out to ensure the participation of the local people, traditional healers and the commercial representatives” (IES, 1999:12) although there was no report synthesizing the specific results of the CAMP in the Progress Report.

At a program level, MAPPA co-organized (in collaboration with the Ministry of Forest and Soil Conservation of Nepal) a CAMP process for the prioritization of medicinal plant species of Nepal. The CAMP process was endorsed by the IUCN Species Survival Commission and its Medicinal Plants Specialist Group (MPSG) and was represented by its chair Danna Leaman. The purpose of the workshop was to facilitate the systematic prioritization of select species and management actions required for medicinal plant species conservation, both in situ and ex situ (Karki, 2001:3). The events were held in Dhulikhel (pre-Camp Workshop) and Pokhara (Main workshop), Nepal in December, 2000 & January 2001 with 48 participants representing governmental, non-governmental, international research organizations and private sector concerns. Participants were from 10 countries and represented a variety of disciplines, including botany, forestry, conservation ecology, herbal pharmaceuticals and traditional medicine. One unique feature of this CAMP was the representation of collectors, industry, donors and forest department at the workshop. Fifty-one MP species were assessed according to the IUCN Threat Categories (Version 3.1) of ‘critically endangered’, ‘endangered’, ‘vulnerable’, ‘near threatened’, ‘least concern’ and for those lacking sufficient information, ‘data deficient’.

**Recommendations:**

The Pokhara workshop was considered a success in terms of its contribution to the systematic prioritization of key species, and in providing an opportunity to consolidate the knowledge of practitioners from a diverse pool of disciplines and experience. However, the recommendations for management actions required for conservation were not outlined at the session. The workshop organizers recognized this in the proceedings, stating that the time-frame and broad participant mix provided little opportunity to “…establish a meaningful and coherent management plan for any of the species assessed during the workshop” (Tandon et al, 2001:i). With this recognition, the management-related results of the Pokhara CAMP were therefore to be viewed as “…a set of recommended management and/or research priorities that could be taken up by concerned conservation management agencies”.

As a relatively new assessment tool, the CAMP process could be further refined based on the incorporation of developments, comments and synthesis of lessons such as those that emerged from the Pokhara CAMP. One notable ‘missed opportunity’ during the CAMP session was the lack of a forum for participants to collectively reflect and comment on the methodology. A facilitated session at the end of the workshop would have provided the opportunity for MAPPA to support the development of innovative research methods and novel technologies specific to MAP related research. To compensate, the MAPPA Coordinator and CAMP organizers prepared a summary of the Pokhara session that included reflections and published these in the MAPPA Newsletter and a publication of the IUCN/MPSG. It is expected that a MAPPA consultant will
prepare a brief report on the experience of CAMP as applied in Pokhara, and will provide suggestions and comments to the IUCN Medicinal Plant Specialist Group.

In addition, there is an opportunity for MAPPA to contribute to the improvement of the CAMP methodology by reviewing the experience of the application of CAMP within the small-grant projects. As a methodology promoted by MAPPA, a systematic sharing of experience in the application of CAMP would provide evidence-based lessons for the further enhancement of the methodology in its use for MAP conservation. The Nepal CAMP exercise has contributed to building capacity and expertise in the implementation of the CAMP method, in the six MAPPA target countries.

4.2.3 Cultivation Technology

There is growing interest amongst conservation organizations towards promoting domestication and cultivation as a means to enhance production and meet growing demand for select MAPs without increasing pressure on wild harvested resources. MAPPA subscribes to this as a preferred strategy, and has prioritized the development of methods, options and strategies for the domestication and cultivation of medicinal plants under its first objective.

MAPPA views the domestication and cultivation of MAPs as a multi-faceted strategy with the potential to...
- improve current and future demands for plant-based drugs;
- contribute to the conservation of the resource by relieving pressure on wild populations;
- meet an expressed need of local and indigenous communities to enhance the livelihood potential through natural resource management;
- supplement the local availability of MAPs to meet local health care needs in areas without access to primary health care;
- engage local and indigenous communities in the primary production of MAPs in the hope of ensuring their share of the benefits of commercialization of the resource, while ensuring their involvement in and control over their own resources and intellectual property.

Nine of the 13 projects have incorporated varied aspects of cultivation and propagation as a means to increase production. Of the three major sources of medicinal plants – wild harvest, commercial cultivation and local, small-scale production in home gardens and agro-forests (Leaman, et al. 1999, Section 2:14) – commercial cultivation of priority species has been a substantial focus for the majority of MAPPA supported projects. A secondary focus has been on the development of small-scale production methods in home gardens and in community forests. Project examples focusing on these activities include:

Commercial Cultivation:
- **SHER**: In an attempt to increase availability of plant resources, and reduce their harvesting from the wild, SHER has developed a nursery, demonstration plot and experimental farm for determining domestication and cultivation of endangered but high-demand local MAPs. SHER has met with marked success in domesticating and propagating species such as

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According to Leaman, et al, 1999: Proponents of cultivation as the preferred strategy include: Palevitch (1990); WHO, IUCN, WWF (1993); FAO (1995); Lambert, Srivastava, and Vietmeyer (1997); de Silva (1997a,b); Heywood (in press).
Aconitum atrox, Aconitum heterophyllum and Saussurea costus, both through root/tuber cuttings and seed germination. The project has successfully produced a complete package of agro-technologies for each of these species, and has offered training in the implementation of a model of mixed-crop cultivation in local communities. The methods used have substantial potential for publication, replication and for scaling up of lessons.

• **IIFM**: IIFM has met with limited success in its objective of developing and cultivating high value medicinal plants for a number of reasons. The intention was to promote cultivation of medicinal plants in private land and in degraded forest areas. In this aspect, the project design was somewhat flawed, in that the area had been experiencing severe drought conditions for the previous 2 years, and several of the plants promoted required irrigation for establishment. Returns from cultivation of mentha in the first year were adequate but failed in the second year given the lack of rain. Other crops, such as Aonla (*Phyllanthus emblica*) required a longer establishment period before harvesting. Still, a small number of farmers with irrigation facilities had planted approximately 150 seedlings of Aonla in their degraded lands and are hoping for a profitable harvest after the establishment period of three years. Secondly, commercial cultivation of MAPs in forested land was not permitted under the Government and Forest Department's rules and regulations (not permitted under FCA 1980). Regeneration and enrichment planting in the natural forest is permissible, although these activities are not priorities of the project as it is currently articulated. Ideally, both of these circumstances would have been identified and addressed prior to the design of the project and the recommendation of cultivation for either commercial markets and domestic use.

• **CECI**: One objective of the CECI project was to introduce cultivation of key species in community forests and on private farms. Four species\(^{14}\) were considered for further research, based on their importance in the local economy, extent of exploitation in the wild, increasing market demand, traditional uses, cultivation potential, and local level value-addition potential (Bhattarai, 2001a). The project has identified improved cultivation and harvesting techniques MAPs at several elevations. In addition, phytochemical analysis revealed that the essential oil content of the cultivated MAPs is higher than that of literature value. The project is a strong example of combined harvest impact studies with cultivation and propagation studies in that it examined the impact on production levels and phytochemical activity, not only of habitat change from wild to cultivated, but of various cropping systems (pure and inter-crops) (Bhattarai, 2001a).

**Agro-forestry in Community Forests:**

• **SAFE Concern**: This project has focused largely on the development of cultivation technology for the production of quality plant materials of priority species for cultivation and regeneration in community forest, government forests and private lands located in the project sites. The project has also established two nurseries, one in each project site involving local people, with the goal of growing seedlings of valuable medicinal and other NTFP species that are suitable for plantations. Both the nurseries are in full operation and produce approximately 10 000 seedlings of various species that are suitable in different climatic conditions. These nurseries are supplying the planting materials in the community forest, government forests and private lands in the project sites. Agro-technological packages have been designed and the cultivation on private land initiated for species such as Tejpat

\(^{14}\) Species selected for cultivation promotion were: *Nardostachys grandiflora* (Jatamansi), *Neopicrorhiza scrophulariifolia* (Kutki), *Valeriana jatamansii* (Sugandhawal) and *Rheum australe* (Padamchal).
(Cinnamomum tamala), Bojho (Acorus calamus), Lapsi (Choerospondias axillaris), Amala (Phyllanthus emblica), Sugandhwal (Valeriana jatamansii), and Chitaito (Swertia chirayita). Among them Swertia chirayita, a short-duration crop, has started providing some income to the local villagers.

- **AVS**: The AVS project has met with substantial success in its efforts to develop research capabilities in the propagation of medicinal plants. They have successfully standardized methodologies for agro-forestry cultivation as a method for the multiplication of medicinal plants. As well, the project has organized a live collection of several provenances of the twenty species studied for reference and further research and supplies of their genuine parts for medicine preparation and evaluation. MAPPA has provided a new small research grant to AVS to research on developing guidelines on proper Harvesting, Primary Processing and Storage of Medicinal Plants which is expected to complete by June, 2002. The research is focusing on the same species for which the earlier IDRC-funded projects had developed propagation methods such as: Holostemma ada-kodien, Holarrhena pubescent, Aegle marmelos and Asparagus racemosus. Preliminary guidelines are already available in the MAPPA files.

### Cultivation in Home/Community Gardens:

- **HFRC**: The HFRC project in Andhra Pradesh has promoted the cultivation of MAPs in local kitchen gardens for domestic, household purposes. This activity was targeted specifically at women and traditional herbal healers, in an attempt to improve locally available and accessible health care options, rather than an attempt to address conservation issues. Training in cultivation was accompanied with training on the preparation of herbal remedies, as well as diagnosis of common ailments and prescription of herbal remedies. The project established a successful demonstration garden and nursery that were used as a training medium and for the production of seedlings for distribution to participants. The HFRC has also initiated community gardens in forests managed by community groups (VSS) under India’s state administered Joint Forest Management (JFM) program. MAPs produced under this cultivation system are directed for local sale, with small amounts being encouraged for domestic use.

Other projects, including ITI, PFI, IES, HPPCL, and HEJ have also promoted cultivation and propagation of MAPs and the transfer of new cultivation technologies to local community members (see Table 4). There is substantial potential to synthesize results obtained out of these studies, comparing similar species, ecosystems, cultivation technologies and markets.

### Recommendations:

Given the nature of the small grant mechanism, MAPPA supports several emerging institutions that are closely linked and responsive to the expressed needs of local community groups (SHER and HFRC are two examples). A common thread of all projects visited during the evaluation, was the expressed desire of community members for the project to invest in strategies to enhance livelihood potential through the management of MAP resources. This observation is supported by several responses to the Project Leader Survey, regarding recommendations to improve MAPPA by including a stronger focus on biodiversity-based livelihoods\(^\text{15}\). Examples include: “We would

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\(^{15}\) Responses to Question number 18 on the Project Leader Survey (“What recommendations can you give to improve the overall MAPPA program?”)
like to see MAPPA program more focused towards sustainable rural income generation” (HPCL); and “commitment to work together in sustainable livelihoods…” (CECI).

Several projects promoting the commercialization and marketing of MAPs are designed largely to meet this expressed need, and are frequently accompanied with market research, and in some cases, the development of ‘biopartnerships’ between farmers and buyers16. From a production and marketing perspective, there are several advantages of cultivation over wild harvest for the production of plant-based medicines. As summarized by Leaman, Fassil, and Thormann (1999), advantages include: reliable botanical identification; steady source of raw material; standardized or improved genotype; and controlled post-harvest handling. Several projects, including SHER, CECI and AVS have contributed substantially to the improving and standardizing the quality of specific high-demand species.

However, despite these benefits, there is growing concern amongst several research agencies focused on conservation, including SUB at IDRC and IUCN-Nepal17, that the promotion of cultivation does not necessarily prevent or reduce harvesting of wild materials, nor does it always result in equitable sharing of the benefits of MAP marketing. Reluctance is based on the concern that disproportionate benefits may result from the project in favour of landholding and prosperous farmers with irrigation and other external inputs. Introducing new markets for cultivated MAPs may provide an incentive for landless and/or marginal farmers to increase their harvest from the wild, resulting in over-harvesting of high-demand species. Alternatively, there is a concern that increased competition from landholding farmers growing high-demand MAPs, may displace groups which have traditionally harvested medicinal plants for a niche market, typically women, marginalized or landless groups, and thereby reduce their livelihood options. MAPPA has attempted to address this concern by targeting projects which develop gender sensitive cultivation technologies such as homestead and kitchen garden cultivation, as in the HFRC project. Paired with this strategy is the need for more support for building capacity amongst MAPPA recipients in the use of social and gender analysis tools.

Given the pool of research in support of domestication and cultivation, MAPPA has a unique opportunity to investigate and resolve some of these issues. Given MAPPA’s desire to work closely with marginalized populations, targeted research and analysis on the socio-economic impacts of domestication and cultivation on a wide cross section of community stakeholders including landless and marginalized community members should be prioritized. Also, the impact of domestication, ecosystem changes and new harvesting regimes, on the bio-chemically active components of MAPs, should be investigated further. In the practice of many tribal herbal healers, and in the Ayurvedic system, the potency of several MAPs species are perceived to be based largely on ecosystem characteristics, as well as the time and method of harvest. Changing these practices could potentially reduce the perceived efficacy, and therefore reduce demand. SHER and CECI have conducted detailed phytochemical studies to determine the impact of microclimatic changes from wild to cultivated, as well as under various cropping systems and harvest regimes. Both of these project experiences and results should be scaled-up to inform similar initiatives. The preliminary results from both projects indicate no major change in photochemical properties provided cultivation is implemented either in or around the natural habitats of the targeted species (as in the AVS project) or in ecophysiological conditions that mimic the original habitats of the species being cultivated.

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16 See section 4.3.2 of this report, describing biopartnership initiatives supported by MAPPA.
17 The evaluation team, along with Dr. Karki, met with IUCN Nepal staff on January 23, 2001 while visiting projects in Nepal. This subject was addressed as a concern in conversation.
4.3 MAPPA Objective #2: Equitable Commercialization

Regional priorities identified and articulated in IDRC supported collaborations have included:

- impact of commercialization on local access to resources and use of MAPs;
- commercialization and sustainable harvesting;
- promoting long-term and equitable partnerships between the collectors/growers and users;
- standardization of production and development of quality control mechanisms; and
- the design and implementation of mechanisms to ensure community/local benefits are derived from the research.

In an attempt to address these regional research needs, MAPPA’s second objective states: To promote innovative resource utilization and management strategies involving local people, especially rural poor and tribals, to derive more equitable benefits from medicinal and aromatic plants and derived products.

The principal components of this objective are the commercialization of MAPs and the equitable sharing of benefits from commercialization with marginalized groups.

As outlined in the MAPPA proposal (p. 16-17), activities proposed under this objective include:

- Evolution and implementation of formal and informal “biopartnerships” between local communities and industry to promote equitable benefit sharing practices;
- Development and training of improved storage, primary processing, packaging and marketing of MAP products among rural communities, and the standardization of raw materials including crude herbs and herbal extracts.
- Systematic gender analysis of the harvesting, production and exchange of selected species and derived products;

Proposed outputs of this research support included:

- Partnership based MAP conservation projects participated by industry and rural communities;
- Studies on the standardization and quality control of raw materials;
- Increased flow of information on trade and commercial activities to local people;
- Study on impact of commercialization on local health care system especially on women and tribal groups.

An examination of the degree to which research has produced anticipated outputs is presented below, with a focus on the key elements of:

- Improved information on marketing, trade, and commercialization;
- Examples of simple buy-back mechanisms (informal) ‘biopartnerships’ which demonstrate equitable sharing of benefits with local communities,
- Standardization of post harvest methods, and storage.

4.3.1 Improved information on Marketing, Trade and Commercialization

Research into the domestication and cultivation of MAPs for commercial markets is intended as both a conservation strategy, and a biodiversity-based livelihood strategy. Adequately estimating and predicting market demand is a necessary step prior to the selection of MAPs for the promotion of commercial cultivation. Also, documenting local and regional marketing and trade information is important for assessing the threat status to specific high-priority species.
MAPPA supported research has contributed substantially to the documentation of marketing and trade issues related to MAPs, although the majority of data collected has focused on marketing and trade at a relatively small scale. The majority of projects incorporate market analysis for both cultivated and wild-harvested species, as market incentive is a typical criterion for the selection of species appropriate for commercial cultivation. The level of detail in the market studies range widely, from basic lists of marketable plant products and their average prices, to detailed production-to-consumption and marketing chain approaches. Several projects have investigated rates of returns for cultivation of specific species and parts (IIFM, SHER), and policy constraints or incentives for marketing of specific species. The MAPPA Program Coordinator has also contributed to research in this area, through his paper “Certification and Marketing Strategies for Sustainable Commercialization of Medicinal and Aromatic Plants in Chhatisgarh”.

Project examples include:

- **HFRC**: Prior to assessing the feasibility of cultivating or regenerating economically viable medicinal plants in forests, the HFRC conducted a study to evaluate markets for 16 species of local medicinal plants with high exploitation rates, which are typically purchased by the local government-run cooperative, the Girijan Cooperative Corporation (GCC). The following plants are a sample of those that have been assessed for their market potential: *Cassia fistula*, *Bixa orellena*, *Cassia senna*, *Solanum Khasianum*, *Lawsonia inermis*, and *Hibiscus sps*.

- **HPPCL**: Conducted a detailed market study which identified major species and annual trade volumes from the district, trade routes and mechanisms, the role of wild MAPs in the local household economy, and potential benefits to be shared by women and other disadvantaged groups from the marketing of MAPs.

- **SHER**: A detailed market study was conducted in the early stages of the project in order to identify market chains, potential buyers, and high-priority plants with market potential. This information was used to inform the design of parameters for a biopartnership between producers and buyers. Species were selected based on their threat status, urgent need for conservation and sustainable use, and their opportunity to provide materials for a niche market. The development of innovative cultivation methods for endangered plants with no prior history of cultivation was intended to provide local communities with a comparative advantage.

- **IIFM**: A study of the local market conditions was conducted in order to inform the selection of species with a high market demand, to be recommended for cultivation. Five species were selected (Aonla, mentha, aswagandha, sanai, dedawal) and promoted for cultivation with local farmers. For each species, the research team conducted a cost benefit analysis to determine the rate of return for species under commercial cultivation. The results of the market studies were shared with participants through training programs and an information centre maintained by project participants.

- **CECI**: Four species were considered for further research, based on their importance in the local economy, extent of exploitation in the wild, increasing market demand, traditional uses, cultivation potential, and local level value-addition potential (Bhattarai, 2001a). These species were: *Nardostachys grandiflora* (Jatamansi), *Neopicrorhiza scrophulariifolia* (Kutki), *Valeriana jatamansii* (Sugandhawal) and *Rheum australe* (Padamchal).

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• **ITI**: The project has commenced research to improve the marketability of herbal products produced from neem, aloe and tamarind. Several products from tamarind such as tamarind paste, sauce, jam, chutney were developed and demonstrated to selected women in the community to enable them to produce and market them.

• **SAFE Concern**: included marketing information in their training program including marketing chains, role of middlemen and other stakeholders. In addition, the assured market demand was considered a criterion in selecting species to promote for cultivation.

Projects with a component of training in the commercial cultivation of MAPs typically include marketing information and assistance in their training curriculum. In this way, MAPPA supported-research has enhanced the flow of information regarding markets, trade and commercial activities to local communities, and improved the opportunity for enhancement of biodiversity-based livelihoods.

**Recommendation:**

It is recommended that MAPPA sponsor a consultative study to synthesize the results of, and identify parallels between, the small-scale market studies conducted in the MAPPA projects. Such a study would include a strategy to share the results regarding local market trends with policy makers and international research agencies such as TRAFFIC and the IUCN. In this way, MAPPA can scale-up local level information, and improve its contribution to the documentation on the trade status of MAPs covered by the Convention on International Trade in Endangered Species (CITES).

### 4.3.2 Biopartnerships and Buy-back mechanisms

Research based on the findings of IMPN projects and national consultations conducted during the design of MAPPA, identified the need to “…develop working mechanisms to create frameworks for sustainable partnerships between industry and rural communities to enhance both the sustainable use of medicinal plants as well as the economic development of rural communities” (MAPPA Proposal p.4). Although the MAPPA program has not set parameters or guidelines for acceptable practice in the formation of biopartnerships, the coordinator has prepared a research paper on the subject, which serves to provide a broad conceptual framework for application in the Small Grant projects.

The paper, entitled “Development of Biopartnerships for Sustainable Management of Medicinal and Aromatic Plants in South Asia”, was presented at the 21st Congress of the International Union of Forestry Research Organizations (IUFRO), in 2000. In it, biopartnerships are defined as “…symbiotic relationships between industry and local communities/ resource poor people in an interdependent fashion” (Karki, 2000:13). The incentive for industries to engage in biopartnerships is the improved prospect of ensuring regular and reliable supplies of quality raw materials. For rural communities and their members, the motivation lies in the likelihood of ensured markets at fair prices with possible gains in technology transfer that will improve sustainable management of the resource.

Biopartnerships are designed to ensure that local community members, especially women, tribal peoples and small farmers, are given “… an equitable share of the benefits from the common pool
of resources on which they depend” (Karki, 2000:13). Ideally, the partnerships take the form of a formal contractual agreement that set parameters around issues such as:

- the input support provided to the farmers/collectors,
- the desired quantity per season/year,
- the price range acceptable for the raw material,
- standards for methods of production/collection, and in some cases,
- the percentage of profit to be returned to the community members for investment in further research and development of sustainable MAP production and/or community development (Karki, 2000).

Only one project to date, the SHER project in Uttaranchal, India, has implemented a formal biopartnership according to the above mentioned concepts. The SHER project has developed agrotechnologies for the cultivation of high demand and endangered MAPs and is promoting their cultivation with farmers located in the buffer areas of Govind Pant National Park. The park regulations prevent the cultivation and sale of any commercial crops outside of the park’s boundaries. As such, SHER staff negotiated an arrangement on behalf of local farmers, in which farmers receiving training and subsidized plant material through the MAPPA project, would be certified as growers operating under agreed-upon standards of production, and would be permitted to sell their produce. SHER staff also negotiated a formal biopartnership between certified farmers and an Ayurvedic pharmaceutical company based in Dehra Doon. The arrangement ensured that farmers with a guaranteed market and a fixed fair price for their harvest, in exchange for exclusive rights as the sole buyer. In addition, the company guarantees to pay 25% of production costs up front to farmers, and 5% of profits are returned to the community as an investment to continue research and development in the sustainable production of MAPs. In that the MAP crops recommended by the project require a 2-3 year establishment period before harvest can occur, the sale of a crop has yet to occur. Once the agreement is fulfilled, it would provide an opportune case study to examine the socio-economic impacts of the biopartnership on livelihoods for participating farmers. The project has maintained consistent records documenting the demographic profile of farmers participating in the program and their rates of production. This will provide an ideal data set for analysis of the socio-economic impacts on livelihoods in the community.

Projects that have supported informal and formal buy-back mechanisms include:

- **HPPCL**: The project has encouraged selected CFUGs towards the cultivation of valuable MAPs in their forests by providing them with necessary demonstration, training, technical assistance, and a market guarantee for the produce and planting materials. The project has established an informal buy-back agreement for MAPs produced by participating farmers. In terms of value-added MAP products, the project has provided technical support for the establishment of an essential oil processing unit in a remote community by a CFUG member who had participated in the training (Bhattarai, 2001; HPPCL, 2001:6). HPPCL has offered a buy-back guarantee of the essential oil produced by that industry.

- **IIFM**: Although the project has met with limited success in the promotion of cultivation of specific MAPs, IIFM staff have served as liaison between farmers in the area for the establishment of an informal buy-back arrangement. One large-scale farmer with experience in cultivating MAPs for the district market had agreed informally to purchasing the harvest from smaller scale productions in the area.

- **SAFE Concern** – The project has worked in cooperation with Dabur-Nepal and the HPPCL through the provision of planting material, training and demonstration. SAFE Concern staff
have negotiated an informal buy-back agreement between farmers/collectors who have participated in the training and the HPPCL and Dabur-Nepal.

Recommendations:

A biopartnership, ideally, is an improvement on simple buy-back mechanisms, in that it ensures the equitable sharing of benefits with a higher level of security than simple market interactions. The next conceptual step would be the integration and trial of biopartnerships, which recognize and reward Intellectual Property Rights (IPRs) of the local communities that have contributed to the development of improved methods of production, or innovative uses of medicinal plants.

Several projects (including SAFE Concern and HPPCL) have initiated informal buy-back mechanisms, but have yet to take the necessary steps to evolve this mechanism into a formal biopartnership. Ideally, the next step would be to synthesize lessons learned from the informal buy-back mechanisms applied in projects, and assess the barriers and opportunities to the establishment of more formal types of relationships. Although the SHER example is still in its early phases, it is recommended that future phases of the project include an analysis of socio-economic impacts of participation in a formal contractual agreement. The results of this analysis would provide valuable lessons for projects attempting to broker similar biopartnerships in the future.

At a program level, an analysis of the benefits and constraints for local communities participating in various types of formal, binding and long-term contractual agreements should be conducted, taking into account legal and economic considerations. This would include an analysis of risks and consequences of potential scenarios, such as:

- the potential of purchase prices fixed at long-term rates falling below market set prices;
- crop failure resulting in a below estimated harvest level and forced repayment by producers of the buyers’ preseason investments;
- inequitable representation or participation of specific community members that could lead to the displacement of marginalized groups and disproportionate sharing of benefits in favour of large-scale or prosperous farmers;
- seasonal or annual market fluctuations resulting in decreased demand and loss of markets.

Also, an investigation into the ‘enforcement’ options open to local communities who may be vulnerable to losses after making significant investments in the crop, should the buyer not fulfill their commitment.

The MAPPA small grant recipient agencies, typically NGOs, CBOs, or research agencies, have substantial potential to serve as ‘honest brokers’ and negotiate between the Village Committee (VC), FUG, or individual farmers/collectors and the industry representatives. In order to build the capacity of MAPPA partners in this area, it is recommended that the MAPPA program produce a clear set of guidelines or recommendations regarding the process of negotiating, methods for ensuring community participation and equal representation, and setting parameters for formal and informal agreements. In this way, MAPPA can empower partners and research agencies to ensure the development and implementation of equitable agreements, rather than MAPPA serving this function by directly hosting collaborations between industry representatives and communities.
Improved Efficiency and Standardization of Post Harvest Processing Methods

The development of improved storage, primary processing, packaging and marketing of MAP products among rural communities, and the standardization of raw materials including crude herbs and herbal extracts are prioritized activities outlined in the MAPPA proposal. A relatively small number of projects focus on improving the efficiency of post-harvest processing or the creation of value-added products. For the majority, the focus is on improving options for the cultivation or sustainable harvesting of MAPs, the end result of which is the sale of raw plant material, rather than value-added products. This is likely due to the limited scope of small grant projects.

Three projects in particular focus on improving processing technology or providing training, technical support and other incentives for the value-addition of MAP resources. This strategy is intended to enable communities to advance from collection/production of raw materials to capture a greater proportion of the final sale price for biodiversity-based products. In addition, linking livelihoods with biodiverse resources, increases the incentive for community members to sustainably manage economically valuable natural resources. Despite these incentives, there are numerous challenges facing biodiversity-based enterprises, including a general lack of capacity for the management of new businesses, access to secure markets, and consistent supplies of MAPs.

Key projects contributing to research on post-harvest efficiencies include:

- **ITI**: the ITI project is focused predominantly on the standardization, improvement of quality, and enhancing the production process and marketability of six Ayurvedic medicines currently produced by RITICOE. RITICOE is an NGO owned by over 12 community leaders, professionals, and scientists. Community members are majority shareholders in a subsidiary company of RITICOE. The project has successfully developed quality control mechanisms for the raw materials, and two sets of quality control parameters for six Ayurvedic products have been tested and recorded. The project has also attempted to improve the livelihood options for cultivators, by introducing them to value-added processing at the local level. There is substantial potential for scaling up of lessons from RITICOE’s approach to transferring technologies for improved processing of raw materials, and mobilizing and involving community members.

- **HEJ**: the HEJ project listed the objective of developing simple norms for processing standardized plant materials, and transferring the composite technologies to interested local communities. Plant materials for each formulation were collected or identified; initial extraction and bottling were carried out in controlled conditions using standard phytochemical techniques. Indigenous technologies were developed to manufacture tinctures, and a pilot level mother tincture manufacturing unit was designed and locally fabricated. The technical report reveals that the report on toxicological studies and manufacturing methods will be published and patents filed in Pakistan. Correspondence reveals that the local communities will have the first right to utilize the technology in their manufacturing practices, but will not have the right to lease the process to other parties. A legal document for this purpose will be drafted and signed between HEJ and community representatives. An analysis of the strengths and weaknesses of this form of locally implemented IPR could provide valuable lessons to inform other projects struggling with formal IPR mechanisms.
- **SAFE Concern**: Farmers have been trained to produce herbal tea from MAPs promoted for cultivation (primarily lemongrass, mentha and cinnamon leaves). Although the production of this herbal tea was originally for household consumption, several participants have started exploring packaging and marketing of the tea in the local market, with support of the project staff.

- **HPPCL**: Basic training (one week offered once per year) was provided to 125 CFUG members and traders from 3 localities on various aspects of NTFPs and MAPs, providing knowledge and practical skills on proper harvesting, and primary processing.

- **IIFM**: project staff have distributed a number of metallic storage boxes to key members of the Herbal practitioners network in an attempt to reduce the loss of material to mold and pests.

**Recommendation:**

The collection of wild MAPs and local level post-harvest storage are often the responsibility of women in rural communities, providing them with important supplemental income (Karki, 2001:5). As such, the development of gender sensitive technologies for incorporating the participation of women in primary processing in order to further enhance their livelihood options, is recommended. Ensuring projects incorporate the perspectives of women and share the benefits of research with women, should be made a priority in the next phase of MAPPA small grant projects.
4.4 MAPPA Objective #3: Supporting the Role of MAPs in Primary Health

In a paper entitled “IDRC and Medicinal Plants: Priority Issues and Research Needs” prepared by Liz Fajber in March 1997, several priority research areas related to the role of MAPs in enhancing primary healthcare options were identified. These included:

- Ensure the safety and efficacy [of traditional plant based remedies];
- The integration of traditional and modern medicine and/or recognition of the complementary nature of different health care systems;
- Support for formal government health care sector to use medicinal plants as part of health care policy;
- Support the organization of local and traditional healers into local and or/national associations to facilitate collaboration, and to deal with the state, health care professionals and researchers with a unified voice;
- Work with local healers (associations) to support and promote the use of medicinal plants.

The review of IMPN supported research and subsequent collaborations in 1997 and 1998, also identified the need to improve the development of safe, effective and standardized plant-based health products as a priority for the region (MAPPA Proposal, p.7).

In response to these identified research gaps, MAPPA’s third objective: to support strategic research on improving access to, and use of, medicinal and aromatic plants as a means of safe and effective primary health care, was incorporated in the program.

As outlined in the MAPPA proposal (p. 19), activities proposed to meet this objective included:

- Assessment of impacts of commercialization of maps on local health systems;
- Collaboration with national health departments, to identify plants which are safe and effective;
- Development of strategies to understand local health care needs and develop approaches to improve delivery of safe, effective and affordable health care. Such strategies include:
  - investigations of local criteria, choices and practices of health care treatments;
  - identification of ailments common in rural areas, preferred plant based treatments and plant formulations; and
  - the development of ‘green health kits’ to raise awareness of the potential of TSM.

Proposed outputs of this research support included:

- Greater understanding of constraints to traditional systems of medicine (TSM);
- Training of local healers and community members in improving the use of and production of safe and effective plant-based medicine; and
- Support to efforts to develop good manufacturing practices of traditional drugs to supply safe and affordable drugs for rural people.

4.4.1 Documenting traditional systems of medicine

Projects which have contributed most substantially to documenting traditional and local knowledge related to medicinal plants and their role in primary health care delivery include the HFRC project in Andhra Pradesh, and the IIFM project in Bhopal.

- **HFRC**: The HFRC project has dedicated considerable time and resources to conducting ethnobotanic surveys in order to document traditional knowledge related to local use of medicinal plants. In phase one of the project (supported under the IMPN), over 400 villages
were surveyed, and approximately 1000 herbal therapies used in the district were documented, with a particular focus on plants used in anti-fertility treatments. The findings of the ethnobotanical surveys were published in a book on the subject, and in several newspapers and journals circulated at the state and local level.

- **IIFM**: The IIFM has conducted an ethnobotanical survey of traditional healers, women and the elderly and have identified approximately 200 plant species being used for medicinal and therapeutic purposes. The project has also supported the establishment of a Herbal Healers Network (see Section 1.1.2) through which they have promoted the use of Patient Profile Registers, to document the disease/symptom treated and the plant-based drug prescribed, the patient's personal details, age, history of illness, etc. Although the project is not systematically documenting local criteria for choosing health care treatments, they are contributing to the documentation of common ailments in the project area and the preferred plant-based treatments commonly used by traditional healers.

**Discussion and Recommendations:**

Several projects, including IIFM, HFRC, and IES, have identified the reluctance of traditional healers to share their specialized knowledge with researchers as a considerable challenge to documenting the contribution of MAPs to local health care. To some degree, this stems from the inherent difficulties of communicating details of imbedded knowledge that are linked to local belief systems. Compounding this, researchers identified a fear of losing control over proprietary knowledge as a driving force behind the reluctance to share detailed information. As such, there are obvious concerns amongst project participants regarding who will benefit from the research results and the extent to which continued local access to and control over the documented information will be guaranteed.

A number of projects have documented generalized traditional knowledge regarding the use of medicinal plants in their project areas, although few have established systematic mechanisms for recognizing intellectual property rights regarding traditional knowledge. Although IPR mechanisms have been established for innovative processing methods, such as in the HEJ project, none of the projects have created or implemented formal mechanisms for the recognition of the intellectual property of individual healers, or collective/local traditional knowledge. At a minimum, project recipients agree to comply with Ethical Clauses 16 and 17 by signing the Memorandum of Understanding with IDRC. Also, MAPPA encourages efforts to promote community access to research results through the maintenance of local information/resource centres for instance, and to ensure community benefits by integrating community participation in the research process, through such processes as locally maintained demonstration sites and herbariums (as in IIFM, HFRC, SAFE Concern).

However, more of an effort should be made towards integrating community benefits and access to project results, with intellectual property issues, especially for projects documenting specialized traditional or local knowledge. This is particularly important considering the number of projects with an emphasis on commercialization of herbal medicinal products and the explicit interest in developing equitable partnerships with industry. Project proposals indicate that the majority of researchers are interested and committed to the principles of IPR. However, project reports reflect a lack of expertise necessary to systematically address these issues. As such, it is recommended that MAPPA commission a study to identify potential guidelines for establishing and integrating local IPR and ABS mechanisms, prior to or in conjunction with documenting traditional
knowledge. An examination of guidelines used by other organizations\textsuperscript{19}, or research into alternative mechanisms to intellectual property regimes that ensure benefits to local and indigenous peoples\textsuperscript{20}, should be included in such a commissioned study.

4.4.2 Supporting Traditional Service Delivery Mechanisms

Both the IIFM and HFRC projects have developed approaches to improve delivery of safe, effective and affordable health care by supporting the training of and information sharing between traditional healers.

- **IIFM**: The IIFM has supported the establishment of an Herbal Healers Network, which supports improved information sharing between traditional healers in the district. The project has documented traditional systems of information exchange, local protocols for training and apprenticeship within the local system of medicine, and has developed new locally acceptable mechanisms for standardizing practice, such as peer review of specific healers and their practice. The participating healers are endorsed by the network in that they receive identification cards that verify the healers have met basic training requirements established by their peers. The network is also used as a mechanism to provide ‘training-of-trainers’ in that it provides training to recognized healers in the identification of wild medicinal plants and their useful parts, methods of harvesting, diagnosing common diseases, preparation of herbal drugs and modes of their administration. These healers are then encouraged to train at least 3 apprentices from the area.

- **HFRC**: The HFRC has also offered extensive training and information sharing opportunities to traditional healers in methods of harvesting and cultivation in kitchen gardens, diagnosis of common diseases, preparation of herbal drugs and modes of their administration.

Discussion and Recommendation

National and regional projects and activities creating linkages and partnerships between traditional healers and modern primary health care facilities are lacking in the MAPPA program to date. Although support for traditional healers has raised awareness of local options for culturally appropriate and affordable health care in remote areas, there has been little attempt to integrate or recognize the complementary nature of the two health care systems. A formal study of the constraints and barriers to integrating the two systems would aid in developing an organized approach to improving service delivery mechanisms in remote areas. The support provided to traditional healers and the creation of structured organizations, such as the Herbal Healers Network in Bhopal, will provide a strong foundation to facilitate collaboration between

\textsuperscript{19} The IDRC supported “Indigenous Knowledge and Innovation Network”, coordinated by the Society for Research and Initiatives for Sustainable Technology and Institutions (SRISTI), could provide valuable lessons in establishing grassroots IPR guidelines.

\textsuperscript{20} The IDRC supported project entitled “Conservation of the Embera and Kuna Medicinal Plants” implemented by the Fundacion Dobbo Yala and McGill University, is working towards developing an innovative IPR system that provides an alternative to patents. This project could provide valuable lessons for MAPPA projects attempting to incorporate culturally appropriate mechanisms alternative to IPR. The Phase II project is researching local perceptions of fair compensation and preferred modes of knowledge transmission. Also, at the national level, the project will present to scientists and politicians, an indigenous viewpoint on national and international laws regarding IPR. The project is expected to have substantial lessons for researchers, both in terms of the local context and for lessons on best practices for integrating local perceptions into ABS and IPR mechanisms.
traditional healers and state funded health care professionals. The AVS project has also developed a model MOU to be used between the cultivators and AVS to arrange a buyback guarantee of cultivated raw materials.

4.4.3 Approaches to improve delivery of safe, effective and affordable health care

Relatively few projects have contributed to the objective of supporting efforts to develop good manufacturing practices of traditional drugs to supply safe and affordable drugs for rural people. The ITI/RITICOE project in Sri Lanka is working towards the standardization, and improvement of quality, production process and marketability of 6 Ayurvedic medicines currently produced by RITICOE. The project has successfully developed quality control parameters for six Ayurvedic medicinal products. The ITI project is a good example of the integration of indigenous and scientific knowledge systems, as illustrated by the institutional collaboration between an agency focused on scientific knowledge generation (ITI), and an organization based on indigenous knowledge (RITICOE). The current AVS project is also developing parameters and protocols for quality control of the harvested and processed products. These institutional arrangements could be potentially scaled-up to provide lessons for valuable partnerships in other projects.

The HFRC is unique in that it is supporting efficacy trials of plant-based drugs or treatments using established protocols, supported by detailed and rigorous documentation of traditional methods. One objective of the HFRC project was to conduct research on the efficacy & validity of the plants and/or plant preparations identified during the ethnobotanical surveys conducted in phase one of the project. The project enlisted the support of a partner agency, the Peoples’ Clinic Trust (PCT) to document 30 case studies of traditional treatment practices for ailments such as jaundice and snakebite. The case studies involved documenting the diagnosis, treatment and recovery rates of patients over an average of three weeks.

Based on treatments documented during the early ethnobotanical surveys, the project also commissioned two pharmacological institutes to conduct efficacy and validation trials of five herbal preparations used as contraceptives, and herbal treatments for diabetes. The project has also worked to improve quality control and standardization of the preparation of herbal remedies and has prepared herbal health kits for distribution during awareness raising campaigns. The project is currently developing steps for the next phase, with a focus on continuing standardization of traditional medicinal practices for key treatments. Local healers, women and motivated community members have also been trained in the improved production and use of plant-based remedies to treat common and non-life threatening illnesses.

Discussion and Recommendation:

The MAPPA proposal identified a critical need for research that “… promotes studies of safety and efficacy of plants and formulations to treat identified non-life threatening conditions” (MAPPA Proposal, 1998:10). Although ensuring the safety and efficacy of traditional plant based remedies was highlighted as a research priority for the region, this has not been a focus for the majority of projects. A rapid assessment of the current pool of MAPPA small grant recipients and the MAPPA program itself, indicates that there is neither the human or material capacity to conduct detailed and long-term studies required to establish efficacy.

The program focused instead on identifying local health care needs, criteria for treatment, documenting preferred plants and plant formulations and in the improvement of recognized
formulations. Conducting safety and efficacy testing through mode-of-action studies, or targeted examinations of efficacy through bioassays or clinical trials were not listed as prioritized activities for MAPPA supported research. Rather, the MAPPA proposal states that the program “… will collaborate with national health departments, such as the Department of ISM in India, to identify those plants which are safe and effective” (p. 19). To date, this has been implemented by working with the newly formed Medicinal Plants Board of India, which operates under the Department of ISM, and promoting the creation of a similar board in Nepal.

Should MAPPA desire to directly support research to address safety and efficacy, a targeted attempt to increase partnerships with or provide small grants directly to pharmaceutical research organizations would be needed. At present, the only project contributing to this research gap, the HFRC, is commissioning efficacy studies with external agencies at a considerable expense. Alternatively, MAPPA could support research to establish or contribute to alternative protocols for safety and efficacy, such as that established by the TRAMIL network.

The synthesis of project results regarding the contribution of plant-based tribal medicine to local health delivery arrangements in rural areas, would provide valuable evidence-based information to influence policy related to the regulation of traditional medicine. This could be combined with a commissioned study, which examines options for improving state level regulation of traditional systems of medicine, which fall outside of the realm of recognized systems such as Ayurveda and Sidha. MAPPA could therefore contribute more substantially to the establishment of state level guidelines and potentially, legal frameworks for the regulation and standardization of traditional systems of medicine, particularly tribal systems.
4.5 MAPPA Objective #4: Networking and Communication

The third objective of this mid-term evaluation was “to assess the strengths and weaknesses of the small grant approach and determine the extent to which the MAPPA program has enhanced regional networking”. An examination of MAPPA’s fourth programming objective will respond to this. MAPPA’s fourth program objective is to support better access to, broader distribution and greater utility of information about medicinal and aromatic plants through networking and communication.

This objective is based largely on the identified regional priorities to:
- facilitate networking, communication and collaboration at national, regional and international levels;
- support local practitioners/traditional healers associations;
- facilitate linkages and cooperation among various stakeholders such as local researchers, traditional practitioners, national governments and ministries; and
- improve coordinated efforts, extend outputs/outcomes of MAP related research to policy makers.
  (Fajber, 1997; MAPPA Proposal, 1998)

The MAPPA proposal outlines the following types of activities under this modality to improve regional collaboration with non-MAPPA programs:
- co-funding, joint activity planning, information sharing, coordination of activities leading to meaningful debate and reforms in national policy and legislation;
- Consultation and cooperation on the implementation of national and international agreements;
- support regional consultations and workshops;

MAPPA also intended to provide logistical and research support to partners through:
- communication of information of other research activities with non-MAPPA programs;
- facilitation of information exchange of methodologies, results, technologies and activities;
- assistance in dissemination and analysis of research results, and bringing local results to national and regional policy forums;
- supporting training opportunities such as research methodology workshops.
  (Proposal p. 21)

Specific outputs intended under this objective included regional consultations and workshops on:
- Strategies for MAP Conservation;
- Gender Mainstreaming in MAP activities;
- Sharing Experience in Sustainable use and Conservation of MAPs;
- CAMP workshops in Bhutan, Nepal and Pakistan to develop a list of prioritized species.
  (Proposal p. 23)

4.5.1 Contribution to Networking and Regional Collaboration

Based on the knowledge of IMPN weaknesses, such as insufficient collaboration with other established organizations/activities in the region, and inadequate support to grassroots organizations, MAPPA was designed to provide a more strategie, focused and collaborative approach to research issues in South Asia.
Although not an explicit network, overall goals of MAPPA include facilitating effective information exchange and enhancing regional networking (MAPPA Proposal, 1998). To date, the network function of MAPPA has been loosely defined, and does not operate with a formal structure or mandate. Rather, networking is facilitated through two complementary functions:

- facilitating information sharing between the loosely allied collection of small grant projects;
- partnership building with non-MAPPA partners through the Coordinator’s participation in national and international conferences and workshops; and
- information dissemination and sharing through the publication of MAPPA’s technical publication and the Newsletter: Medplants News, which is being jointly published with the FRLHT, Bangalore.

4.5.2 Small Grant Mechanism:

The small grant mechanism employed by MAPPA provides an opportunity to support a wide variety of institutions and interests, and expanded coverage of a broad range of themes, eco-geographic areas, countries and local communities. Recipients of small grants from MAPPA have typically included non-government organizations, university-based research agencies, government research departments and to a lesser degree, private sector companies. Although an attempt is made to ensure some degree of representation of projects in each participating country, the majority (8) of the projects are in India, followed by four projects in Nepal, two in Pakistan, one in Sri Lanka and planned activities in Bangladesh and Bhutan. The grants range from CND $6100 to CND $30500, with an average grant of CND $24095.

MAPPA currently provides considerable logistical, technical and research support to partners, particularly in the early phases of proposal and project development. The Coordinator typically visits each project in the early and interim phases of the project cycle in order to conduct monitoring of project activities. Project Leaders have identified this individualized support as a key strength of MAPPA, particularly for emerging and small-scale institutions, such as SHER, SAFE Concern and HFRC. In Nepal, the coordinator has supported strategic planning and collaboration between MAPPA partners by hosting regular meetings to discuss project activities, results and achievements. Three Nepal based MAPPA partners, namely ANSAB, FECOFUND and CECI, have collaborated to design a larger scale MAP conservation project that has received co-funding support from MAPPA and FORD and parallel funding from CIDA’s Canadian Cooperation Office (CCO) in Nepal.

With regard to information sharing, the MAPPA program works in collaboration with an Indian NGO, the Foundation for Revitalization of Local Health Traditions (FRLHT) in the production of a quarterly newsletter entitled Medplant News. The newsletter profiles the activities of MAPPA’s small grant partners as well as other MAP related activities, research and conferences occurring in the region. Additional information sharing efforts have included the co-ordination and sponsorship of national and regional meetings and conferences. MAPPA has also published six technical publications and supported the publication of two others, which have been widely distributed in the region to MAPPA’s partners, key donor agencies and government departments.

In January 2000, MAPPA sponsored a three-day workshop in Pokhara, Nepal, as an opportunity for small grant recipients and several non-MAPPA partners to exchange methodologies, results,

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21 See Annex 2: Summary of Project Leader Survey Results
technologies and activities. The workshop resulted in a list of broad recommendations around the management of cultivated and wild MAP resources, key emerging issues of land and resource tenure, and the potential of MAPs in providing biodiversity-based livelihoods. The proceedings of the workshop are in the process of being compiled. The program has also supported the ‘Festival of Indian Medical Heritage and Medicinal Plants’, a forum for organizations to share experiences, discuss best practices held in India in 2000. MAPPA has supported two fellowships for MAPPA supported researchers to participate in training offered by the IIFM on the "Sustainable NTFP management for Rural Development".

Despite these successes, the current extent to which the small grant mechanism is enhancing regional networking is quite limited. Although the Pokhara workshop was a considerable move towards improving information sharing between the small grant recipients, there are very few mechanisms in place for MAPPA partners to correspond directly with each other. Information sharing between recipients remains heavily dependent on the initiative of the Program Co-ordinator. Eight of the nine respondents to the Project Leader survey recommended improving opportunities for interaction between small grant recipients. Without specific mechanisms in place to facilitate information sharing between small grant recipients, the meeting of this objective becomes a resource and time consuming effort for the Program Co-ordinator.

Recommendations

There is significant potential for the small grant mechanism to serve as a means for improved information sharing and scaling up of lessons learned between small grant projects. Given IDRC’s presence in the region, the MAPPA program has the benefit of a relatively long history of project results on which to build a cohesive and complementary research program for the region.

Rather than duplicate efforts by creating another formal network in the region, there are several options for improving information sharing, enhancing collaboration and preventing duplication of effort between MAPPA partners. These vary widely in scale and structure, and should begin with a workshop designed to assess the perceptions of MAPPA partners of the needs and opportunities for improving the information sharing opportunities of the small grant mechanism. The workshop would be tempered with the knowledge that the creation of a more formalized network is beyond the scope of the MAPPA project as it is currently designed. Additionally, the workshop should include a recognition of the challenges facing networking and information sharing in the region, including vast cultural and linguistic boundaries, an emerging information technology sector, and a general lack of institutional and political support for the collaborative exchange of information.

The following set of recommendations for improved information sharing between small grant recipients emerged from the Project Leader survey conducted during this evaluation:

- improve circulation of newsletter to external partners;
- improve Project Leaders’ access to documents from other projects by posting publications and reports on IDRC/SARO’s webpage or distributing a list of reports available upon request;
- distribute a list of names, contact information and profiles of MAPPA supported researchers;
- establish an electronic list serve with rotating moderators/chairs and with provision of training in moderating electronic forums;
- investigate potential of joint publication(s), working papers, project papers, focused on methodological lessons;

23 See Annex 2 of this report for detailed results from the Project Leader Survey.
• investigate the potential of forming a ‘federation’ or association of MAPPA partners to promote regular interaction between MAPPA partners, as opposed to a formal network;
• provide more opportunities for researchers in regions to exchange project experiences – work towards developing self-sustaining connections by hosting regular forums for regional or national partners and encouraging exposure visits across MAPPA projects.

Providing self-sustaining opportunities to improve information sharing directly between MAPPA partners, rather than through the MAPPA coordinator, would increase the cross-fertilization of ideas with other research partners, the potential of scaling up of project results, collaboration to identify policy targets, and the creation of policy level recommendations based on combined findings.

4.5.3 Information Sharing with Non-MAPPA Partners

In addition to the effort to increase collaboration and information sharing between MAPPA small grant recipients, the program has focused on disseminating the approaches, lessons and results of MAPPA supported research in national and international forums. This has been accomplished primarily through the Coordinator’s participation in national and international conferences and workshops. The MAPPA Coordinator has published or presented the following papers at relevant workshops/conferences:


A prioritized activity under this objective was the coordination of activities leading to meaningful debate and reforms in national policy and legislation and the improved consultation and cooperation on the implementation of national and international agreements. MAPPA has supported two national consultations, one in Pakistan on July 22, 1999, and one in Nepal on May
14, 1999\textsuperscript{24}, addressing the constraints and opportunities for sustainably developing the MAP sector. Other examples of this include:

1. The MAPPA-supported workshop entitled “Medicinal Plants cultivation in Uttaranchal: Policy, Production, Collection and Distribution”, held on March 3-4, 2001. During a presentation at the workshop, the Coordinator recommended the declaration of Uttaranchal as a ‘herbal state’, and the adoption of a Herbal policy. This recommendation was implemented later in 2001, and a MAPPA supported research agency, SHER, has been designated as a certified source of seedlings for the cultivation of endangered high-altitude medicinal plants (Karki, 2001b).

2. Expected outcomes for this objective also included hosting CAMP workshops in Bhutan, Nepal and Pakistan to develop a list of prioritized species (Proposal p. 23). Although the program has not yet sponsored CAMPs in Bhutan or Pakistan, MAPPA organized the first ever Conservation Assessment and Management Planning (CAMP) workshop in January 2001 bringing all the stakeholders in the discussion. As a result of the CAMP, a list of 51 species of medicinal plants, including all the taxonomic and commercial information, has been prioritized and submitted to the government of Nepal in order to inform the regulation of MAP trade and cultivation (Karki, 2001b).

3. MAPPA organized a national Colloquium on Role of Medicinal Plants in Rural Development and Biodiversity Conservation, which recommended the establishment of an autonomous Medicinal Plants Authority to the Govt. of India. This would serve as an institutional body to address complex and multi-sectoral issues regarding the medicinal plants sector in India. Based on follow-up by MAPPA and other partners, Government of India through its Executive Order decided to set up a Medicinal Plants Board on November 3, 2001. The Board is now fully functional. MAPPA is supporting a consultative process to establish a similar Board in Nepal (Karki, 2001b).

4. MAPPA also co-funded a two-week long Regional Training Program on Biodiversity Systematics: Evaluation and Monitoring with an emphasis on Medicinal Plants; Sept. 2-12 in collaboration with UNESCO Regional Office, New Delhi. MAPPA mobilized the funds of 7,500 USD from RAF of SARO. The week-long training was organized at the National Botanical Research Institute (NBRI), Lucknow, India which was attended by more than 30 participants from all the seven SAARC countries plus some southeast Asian countries and Iran.

5. In collaboration with USAID, ICIMOD, FAO.N, WWF-Nepal and others, MAPPA supported a regional workshop on Community-based NTFP Management on April 8-10, 2000. The event was organized by the South & Southeast Asian NTFP Network. Approximately 100 participants from 10 countries attended the workshop in which 37 papers (including that of the MAPPA coordinator) and 12 posters were presented. The proceedings have been published and widely distributed (Karki, 2002).

In addition, the coordinator serves on the following regional and international research committees or networks, as chair, facilitator and/or participant, and representative of MAPPA:

- Group Coordinator, IUFRO Div. 5.11.02: Forest Medicinal Products Working Party, 2001-05

\textsuperscript{24} “Constraints and Potentials for Sustainable Management of Medicinal and Aromatic Plants (MAPs) in Nepal”, prepared by Dr. Keshav Kanel, Forest Economist and MAPPA Consultant. June 1999.
Recommendations

Despite limited human and capital resource dedicated to information sharing, MAPPA has established itself in the region as a respected and experienced program of research. The pro-active participation of the MAPPA Coordinator in the research design, intensive monitoring and networking has ensured output-based research management. Participation and presentation of lead papers by the Coordinator in national, regional and international conferences on policy reforms, priority setting, and holistic development have demonstrated evidence of influence MAPPA’s work in policy and decision making in the South Asian countries. However, the effort required to sustain this level of activity on the currently allocated resource may not be sustainable. The gradual building of capacity within each project to address and influence policy and decision making by integrating more direct policy analysis in the project cycle, especially in scaled-up projects like MAPPA-Nepal, is recommended. MAPPA should encourage projects to reflect more systematically on the policy context, to identify policy constraints and targets, and to package research results in a strategic way that will inform decision making locally and nationally. This should be paired with the development of human and financial resource capacity at the MAPPA Coordination office.
4.6 MAPPA Objective #5: Partnership Development and Capacity Building

The final objective of MAPPA is “To promote partnerships, capacity building and institutional commitment to sustainable use and production of medicinal and aromatic plants through enhanced regional cooperation, training and research in the South Asian region”. The principle components supported in this objective focus on building partnerships in the region, and capacity building at two levels, institutional and within the beneficiary community. The first, building institutional capacity of the recipient agency and field level partner agencies assisting with the implementation of the project, is intended to occur through support for productive partnerships and providing opportunities for shared learning. The second, building capacity of participating communities is intended to occur through support for local skills enhancement, training opportunities, and improved access to biodiversity resources.

As summarized in Annex 1, the activities planned in the proposal to meet the objective of building institutional capacity of MAPPA recipients and partner agencies, included:
- Development of institutional technological capacity through training programs, promoting researchers’ participation in courses, workshops, exchanges, and internships;
- Earmarking funds to grassroots institutions in order to build local research capacity and long-term national and regional capacity to sustain research and networking initiated by the project (Proposal p.25).

The program encouraged projects to participate in the following activities in order to build local level community capacity:
- Support local institutions to impart practical training in MAP cultivation, primary processing and marketing;
- Target women and tribal people in training;
- Aim at enhancing the capacity of local NGOs or CBOs in simple propagation methods in ex situ conditions, sustainable harvesting techniques, simple processing and marketing of MAP products; (Proposal p. 23)

Major anticipated outputs with regard to the conservation of medicinal plants included:
- Increased cooperation between communities and government at project sites, with tangible benefits to conservation and development;
- Development of technological expertise (e.g. in situ conservation methods, propagation techniques, technological know-how of primary processing, storage and harvesting);
- Greater institutional cooperation and commitment to conservation and sustainable use of maps, nationally, and regionally;
- Support from MAPPA for the publication of research results in local, national and regional forums targeting researchers as well as policy makers;
- Dissemination of training manuals, research guidelines and workshop proceedings.

In order to assess the progress to date of MAPPA supported research in creating partnerships and institutional commitment in the region, and in building capacity of research organizations and community groups, an examination of the degree to which research has produced anticipated outputs is presented below. Discussion is oriented around the following key components:
- Capacity building of local participating communities through effective local partnerships;
- Establishment of formal and informal partnerships between MAPPA and non-MAPPA partners within the region;
• Capacity building of recipient agencies through the establishment of formal and informal partnerships between MAPPA small grant recipients.

4.6.1 Capacity Building of Local Community Members through Effective Local Partnerships

A component of MAPPA’s fifth objective was building institutional and individual capacity within the local communities participating in the project. This was intended to occur through support for local skills enhancement, training opportunities, and improved access to biodiversity resources. To a large degree, projects have succeeded in partnering with existing local organizations to implement the research. Local level, community based partners have included local Forest Departments, Village Development Committees, Women’s Committees, Panchayats (village level government), Community Forest User Groups, informal collectives of NTFP collectors, and local processing companies. Examples include the IIFM’s work with the local Forest Department and the local NGO Society for Rural Upliftment in Betul District (SRUB), which has been based in the area for over 10 years. The HFRC implements their project in collaboration with the Peoples’ Clinic Trust (PCT) also operating in the project area for approximately 10 years. SHER has formed partnerships with the local Panchayats, and SAFE Concern with the local CFUG. In most cases, staff members of these local partners participate in training programs and benefit from other MAPPA resources. These types of professional partnerships have enhanced local capacity and awareness through the cross-fertilization of ideas, interests, and initiatives.

Six projects have focused a large portion of resources on training and information dissemination at the local level. This has typically occurred through conducting awareness raising campaigns, and the development of local information centres and/or demonstration gardens, as illustrated in the following examples:

• **HPPCL**: The project offered basic training (one week offered once per year) to 125 CFUG members and traders from 3 localities on various aspects of NTFPs and MAPs, providing knowledge and practical skills on proper harvesting, primary processing and nursery/propagation techniques. The training programs were run in co-operation with the District Forest Office (good curriculum development – considered the immediate needs of the CFUG members). Approximately 50% of participants were women, one CF was operated entirely by women. (Bhattarai, 2001). The project has also established experimental and demonstration sites in three community forests in the district. Sites were used for training collectors and CFUG members representing different parts of the district and different community forest cultivation, sustainable resource management of MAPs (HPPCL, 2001:6).

• **HFRC**: training with women and traditional healers on the cultivation/sustainable harvest, processing and use of MAPs to treat common ailments, identification of symptoms requiring further treatment/assistance from trained medical practitioner; Motivated healers on correct identification & growing medicinal plants and to share the information with the centre. The centre has also established an excellent demonstration site used for training. They are also working with local representatives (community liaisons) to use their kitchen gardens as village based demonstration sites.

• **IIFM** offered support to traditional herbal healers through a local network which provided a mechanism for ‘training of trainers’ where recognized healers train local apprentices in the identification of wild medicinal plants and their useful parts, methods of harvesting,
diagnosing common diseases, preparation of herbal drugs and modes of their administration. Two apprentices were sponsored by the project to undergo a three weeks training on "Entrepreneurship Development in Medicinal Plants" held by Centre for Entrepreneurship Development in Medicinal and Aromatic Plants (CEDMAP) at Betul, the district headquarters. Three training workshops were conducted on the identification, conservation and sustainable use of natural plant resources with 45 high-level forestry-related personnel including foresters, NGO staff and members of the academic community. Some 35 species of medicinal plants have been planted in the demonstration plot; also, a participating traditional healer maintains a demonstration kitchen garden supported by the project.

- **PFI**: Training of 10-20 local communities in pilot scale cultivation and post harvest care. Demonstration plots are planned as a training platform for local communities in due course of time

- **SAFE Concern**: Four sets of training, two in each project site, were conducted on medicinal plants and other Non Timber Forest Products by involving 110 participants. Two study tours have been organized to give the local people and farmers (51 participants) at different parts of the country with a view to create awareness on the local people on cultivation, processing and value addition to locally available Non Timber forest products and medicinal plants.

- **SHER**: intensive training with program participants through 10 ‘ecocamps’ on awareness raising, and in-depth training programs on cultivation, storing, post harvest processing, marketing etc.

With regard to incorporating women and tribal people in the design and implementation of projects, three of the four projects visited during the evaluation worked with tribal and marginalized groups. They do not, however, take adequate measures to link with local women’s organizations, or include gender analysis that will identify gender-differentiated priorities. Targeted support for training in social and gender analysis from MAPPA is therefore recommended.

One general weakness of the MAPPA program has been the lack of consistent monitoring and evaluation requirements from MAPPA. With the exception of preparing final technical reports for submission to MAPPA, very few projects have conducted detailed, consistent or effective project monitoring throughout the project development cycle. Project mid-term and final evaluations that incorporate the perspectives of local communities are also rare. Monitoring often falls under the responsibility of the MAPPA coordinator. Although this accountability check is necessary, more requirements should be in place to encourage project staff to collect evaluation information throughout the program cycle, to reflect on lessons learned and to develop new packages of methodologies. Monitoring and evaluation of project methodologies and results are essential components of institutional learning and capacity building and should be formally encouraged by the MAPPA program.

4.6.2 **External Partnerships:**

Externally, partnerships are sought in the form of formal agreements for co- or parallel-funding for both the MAPPA Program (resource expansion), and individual MAPPA supported small grant projects. MAPPA’s resource expansion strategy focuses primarily on attracting co-funding agreements with other like-minded donors. This strategy builds on MAPPA’s knowledge base...
and its access to a large and diverse pool of researchers, research organizations and donors (Karki, 2002). MAPPA has established a long-term partnership with the Asia office of the Ford Foundation, which has provided $120020 (CND) in co-funding for the small grant projects and for hosting national conferences and workshops such as the Pokhara CAMP session. The International Fund for Agricultural Development (IFAD) has also committed $150000 (CND) of co-funding to the MAPPA program. At the project level, the Canadian International Development Agency (CIDA) has recently committed co-funding support of $125000 (CND) for a collaborative MAPPA small grant project in Nepal implemented jointly by FECOFUN, ANSAB and CECI.

Outside of formal funding partnerships, MAPPA seeks informal ‘knowledge’ partners, developed through the participation of MAPPA’s Coordinator in international and national conferences, workshops and policy dialogues. International MAPPA partners include the World Conservation Union (IUCN) Nepal, UNESCO, International Union of Forestry Research Organizations (IUFRO), and WWF/TRAFFIC People and Plants. Regionally, MAPPA works closely with the Foundation for Revitalization of Local Health Traditions (FRLHT), Indian Council for Forestry Research and Education (ICFRE), Forest Research Institute (FRI), Nepal NTFP Network (NNN).

In an effort to encourage cooperation on the implementation of national agreements, the program has hosted national meetings in Nepal and Pakistan to highlight the importance of medicinal plants and plan strategies. MAPPA has also supported or collaborated with a number of medicinal plants-based activities in the region. Initiatives supported financially by MAPPA include:
- South and East Asia NTFP Network meeting in Kathmandu, Nepal;
- International Conference on Sustainable Management of Natural Resources in 21st Century, New Delhi, India;
- TRAFFIC/WWF-India supported project in India;
- International conference on Growth, Poverty Alleviation and Sustainable Management the Mountain Areas of South Asia, ICIMOD/DSE; Kathmandu, Jan. 31-Feb. 4, 2000 (presented a paper on Commercialization of Natural Resources for Sustainable Livelihoods: the Case of Forest Products).

In addition, MAPPA has collaborated with:
- TRAFFIC-South Asia & WWF-India Program on Trade in Medicinal Plants in South Asia;
- Govt. of Kerala's plan to convene a state-level workshop and strategy session on the sustainable management of NTFPs and Medicinal plants in the state.

These partnerships are an important component of MAPPA’s delivery mechanism, as they ensure the program remains responsive, relevant and innovative to emerging regional issues. This occurs through the involvement of the Co-ordinator and other MAPPA representatives such as consultants and the IDRC Project Leader, both formally, as committee members etc., and informally, through participation in regional meetings and agenda setting dialogues. In that MAPPA is formed as a program of research and not a ‘member organization’ or a formal network, MAPPA is seen as a neutral convenor and the relationships with ‘knowledge partners’ remain mutually beneficial and iterative. In this sense, the MAPPA program has succeeded in developing a regional reputation as a research program with effective convening power, in that it can build on comparative findings from grassroots research initiatives and contribute constructively to policy debates. One example of this has been MAPPA’s role in the promotion of Medicinal Plant Boards at the state and national levels in both India and Nepal, as discussed in section 4.5.3 of this report.
To be viewed as a neutral body in the region is particularly challenging, given Asia’s complex institutional, social and geopolitical environment. Although there is room for improvement, as discussed in the networking section (4.5.3) of this report, MAPPA has contributed substantially to bringing together non-traditional partners and perspectives to improve the impact and diffusion of research results.

4.6.3 Partnerships between MAPPA Small Grant Recipients for Institutional and Individual Capacity Building

As intended, MAPPA has supported small-scale, emerging institutions such as the HFRC and SHER and has provided them access to forums to showcase their results and methods. For instance, SHER has collaborated with the Forest Research Institute (FRI) in their bid to make UttarRanchal state a herbal state. Also, the Principle Investigator of HFRC has visited other states in India and other countries in the region to participate in national and regional training programs and collaboration. These have been a direct result of the HFRC’s affiliation with MAPPA. For small and emerging research organizations, affiliation with MAPPA has created several new opportunities to collaborate with more established agencies in the region.

The nature of the small grant mechanism facilitates research at the local level for both emerging and established research institutions, which is often effective in forming close, mutually beneficial and long-term partnerships with local communities. This was the observed case for projects such as HFRC, SHER and SAFE Concern. The degree to which results are disseminated, retained and used within local communities is also a strength of MAPPA supported research.

During the course of the mid-term evaluation, project leaders were surveyed in order to assess their perspective of the benefits of participating in the MAPPA small grant program. Feedback focused predominantly on the positive contribution of the program to increasing recognition of emerging and grass roots institutions. Specific examples included:

- **AVS (Dr. Nambiar):** “The institution has received an international reputation because of undertaking this research program. The equipment and other infrastructure acquired through this program have been of great use for ongoing research”.

- **CECI (Sagun Bista):** “Participation in International workshops was very useful in getting exposure to the outer situation as well as sharing my own experience with others. The fellowship provided by IDRC for the training on "Sustainable NTFP management for Rural Development" which will be very much useful to my recent project work as well as to development of my career. Institutional Benefits: CECI recognized as key stakeholder in NTFP sector of Nepal; Research documentation transferable to other CECI's NTFP sector of Nepal; Partnership with different institutions involved in NTFPs/MAPs.

- **HFRC (Dr. Vedavathy):** “The [HFRC] organization was recognized as a Centre for training on traditional knowledge and cultivation & domestication of medicinal & aromatic plants. The investigator received recognition in the Forest Department of Andhra Pradesh as resource person in their various programs and policy decisions”.

25 Dr. Vedavathy was sponsored by MAPPA to participate in Agroforestry & NTFP Training in Beijing, China; participated as resource person to IFAD (FAO), and evaluated projects related to medicinal plants at CHAI, Hyderabad & Botany Department of Kakatiya University.

26 Responses to the Project Leader Survey Question #12: “Please outline the key benefits you (individually) and your organization (institutionally) have derived from participating in the MAPPA Program.”
• **HPPCL (Pradip Maharjan):** “HPPCL being a parastatal and a commercial enterprise, felt a good experience in working together with a research-oriented institute like MAPPA. It was indeed a very good mixture of varied work priorities, Commercial Enterprise vis a vis Research Cooperation entity; and resulted a very positive outcome in the development endeavor of both the agencies”.

• **IIFM (Dr. Bhattacharya):** “IDRC/MAPPA program has been greatly instrumental in creating the awareness amongst us that research priorities must be set in the present policy context and local level conditions. Participatory research methodology, as adopted by the project, could provide good results as far as conservation aspects go, but cultivation must not be attempted unless there are clear indications that water would not be scarce commodity”.

• **ITI (Lakshmi S.R. Arambewela):** “The MAPPA program has enabled me to meet several scientists working in the field of medicinal plants, visit their organizations and factories and attend seminars. These exposures have enabled me to improve my research activities and also participate in a community development program…”

In response to the question, “Has your organization been involved in any new partnerships that have evolved out of your association with MAPPA?” six of the nine Project Leaders surveyed reported the development of new partnerships at the local and national levels, with other NGO’s or CBO’s and with government agencies, as a direct result of the support they had received from MAPPA. In addition, several Project Leaders reported that the assistance provided by the Program Coordinator and MAPPA consultants visiting the projects have substantially contributed to methodology development and enhanced research results. For instance:

• **SAFE Concern (Dr. Parajuli):** “Dr. M B Karki, Dr. N K Bhattarai and other personnel including other MAPPA projects had been instrumental in setting research priorities, developing methods and implementing programs. Their regular visits to project areas and their advise during that periods had also been very fruitful to move towards right tracks”.

• **HFRC (DR. Vedavathy):** “Periodical supportive supervision of MAPPA personnel and their guidance helped a lot to develop the organization and to extend its activities to other fields”.

• **CECI (Sagun Bista):** “Before IDRC/MAPPA project CECI was mostly involved in general development projects. CECI supported the forestry sector to strengthen Community Forest User Groups in Nepal. It was also encouraging people to manage and cultivate MAPs providing technical and financial support. Beside these, the research studies carried out in NTFP/MAP sector were short-term studies. The research experts only were involved. IDRC/MAPPA has helped to encourage local people and institute to involve them in the research project also”.

**Recommendations:**

Although project leaders identified institutional and individual capacity building as a direct benefit of affiliation with MAPPA, the majority of respondents also recommended improved opportunities for collaboration between small grant recipients. The original MAPPA proposal

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27 In response to Question #14: Can you provide specific examples of how the IDRC/MAPPA program and other MAPPA projects or personnel have improved your work with regard to setting research priorities, developing research methods to be used, and implementing projects?
prioritized activities to enhance regional cooperation and improve information sharing through workshops and consultations, encouraging collaboration on research projects and cooperation on implementation of national agreements. These activities were also intended to facilitate the discussion and development of new and innovative methodologies, as well as the exchange of results and technologies between small grant recipients and other MAPPA partners. As presented in section 4.5.2.1 of this report, there is substantial room for improved information sharing and productive partnerships between MAPPA affiliated small grant recipients, that does not necessitate the formation of a ‘member organization’ or formal network. This was a reoccurring theme in recommendations emerging from the Project Leader Survey. The following are examples of responses to Question 18 of the Project Leader Survey (“What recommendations can you give to improve the overall MAPPA program?”):

- **AVS (V.P.K. Nambiar):** “Provide Opportunities for sharing innovative information among MAPPA researchers through national and international seminars”.

- **CECI (Sagun Bista):** “Documentation of lessons learned from MAPPA projects, Linkage with governments for policy feedback”.

- **DEBTEC (Ferdousi Begum):** “Training programme on cultivation of medicinal plants should be arranged regularly”.

- **HFRC (Dr. Vedavathy):** “Regular interaction with the other partners of MAPPA will improve the further development of the network. In this regard may I request MAPPA to form a federation / association of partners? I feel the Newsletter should publish the activities of the MAPPA partners regularly. It must go to the public to know more about MAPPA and its activities. Recognition and sharing of the expertise should be there”.

- **IIFM (Dr. P. Bhattacharya):** “MAPPA must prepare project papers outlining the lessons from each project. Such lessons could be tried out in other MAPPA projects to see their spatial / temporal impact. Policy level recommendations could emerge out of this approach especially pertaining to across the board findings. Coordination/collaboration among MAPPA projects [is recommended]…”

- **ITI (Lakshmi S.R. Arambewela):** “Enable more interaction among members of MAPPA through meetings and electronic media; Include training components in the program. All MAPPA projects should be documented in fair detail along with the participating scientists and enable partners to access them through Internet. Prepare a list of all scientists that are involved in MAPPA programs and enable ready access to them”.

- **PFI (Shakeel Haider Zaidi):** “Coordination among the projects must be strengthened. Training should be provided to the project team members. There must be opportunities like seminars, workshops for the project teams to meet together to share their experiences and views among scientists of the South Asian countries”.

- **SAFE Concern (Damodar Prasad Parajuli):** The way in which MAPPA is working towards sustainable use of medicinal and aromatic plants in South Asia is encouraging. South Asian countries have a lot of similarities and differences not only in geography and climate but also in culture and traditions. The program that MAPPA is organizing is a good forum of learning too. In this respect it should now think one step ahead to bring best technologies to each country in South Asia regarding cultivation and domestication and sustainable use of commercially valuable MAPs. Therefore new technologies amalgamated
with the indigenous knowledge should be special focus in this regard. For this cross-country technicians exchange programs should be organized so that the technicians learn and adopt the latest and viable technology so that cultivation, development and sustainable use of medicinal and aromatic plants is ensured”.

In summary, Project Leaders articulated a need for new opportunities for researchers to share experiences, discuss best practices, and develop collaborative exercises to identify policy level recommendations pertaining to comparative findings. The synthesis and scaling-up of collective and comparative results would allow the MAPPA program to continue to challenge the evolution of a regional research agenda on MAPs. At present, much of this synthesis and analysis falls on the shoulders of the MAPPA Coordinator. This is an arduous task requiring frequent monitoring visits to each project, and an in-depth understanding of the detailed methods applied in and results produced for each project. It is important to note that despite the disproportionate resources allocated to the production of research results at a program level, and the early stages of the program, the Coordinator has accomplished a great deal in this area. This is indicated by his participation in national policy dialogues and presentation of papers based on MAPPA-supported research at national and regional conferences. The program of research supported by MAPPA in Nepal is showing good progress of moving towards this objective, given its close knit group of researchers, collaborating and sharing best practices. Although the group is not necessarily a formal network, they are provided an opportunity under the MAPPA umbrella, to collaborate.

However, this activity is not sustainable under the current allocation of resources. As the program matures and produces excellent context specific research results, the coordination and planning of activities for synthesis and reflection of research methods and results will become all the more critical. Despite the opportunities for capacity building and the work of the coordinator in preparing conference papers, the small grant recipients remain a loosely allied collection of research projects. With improved opportunities to collaborate in order to synthesize and analyze collective research results, this collection of research projects could grow into a regional corps of research.

It is therefore recommended that more resources be allocated to the coordination function of the MAPPA program, to allow for the Principle Investigators of similar or complementary projects to come together to scale-up results and produce policy level recommendations pertaining to comparative findings. This process would be facilitated, but not necessarily led, by the MAPPA Coordinator.
5.0 Summary and Conclusion

In order to summarize and clearly articulate each of the program’s successes, challenges and areas for improvement toward meeting goals and objectives, the following section revisits and summarizes information according to the original Evaluation Objectives.

A summary of recommendations for changes in the direction and manner of operation for the remaining programming period or future phases of MAPPA is included below. The recommendations are normative in that they serve to suggest new directions for each project that will aid in meeting MAPPA’s stated objectives. Each recommendation should be prioritized according to the realities of time, resource and capacity constraints during the planning for the next phase.

5.1 Evaluation Objectives 1 and 2:

1. To monitor and evaluate the progress made towards MAPPA’s original project objectives and to recommend changes in direction and manners of operation for the remaining project period or future phases of MAPPA, and related projects under the MAPPA program; and
2. To document the extent to which the MAPPA small grant projects are contributing to MAPPA's overall program goals and objectives;

The first three objectives put forth in the MAPPA proposal are implemented primarily through the applied research supported under the Small Grant program and match the three programming themes of:

- strategic research to develop innovative conservation methods,
- the promotion of sustainable and equitable commercialization, and
- the improvement of options for safe and effective health care.

The program is making adequate progress towards all of the first three objectives. The predominant focus of MAPPA supported research has been on developing conservation strategies through domestication and cultivation of medicinal plants; secondly on developing sustainable harvesting methods, and cultivation of MAPs in forests. A lesser but still substantial focus has been on developing marketing strategies and relationships with industry/buyers, and training local community members in market involvement. The third, and less pronounced focus of MAPPA supported research has been on supporting traditional healers, supporting MAP based health delivery systems as culturally appropriate and affordable options for health care, and safety and efficacy studies. Key contributions of the program towards each objective, missed opportunities and recommendations for future priorities are summarized in the following tables.

5.1.1 Contribution of MAPPA supported research towards the conservation of MAPs:

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<thead>
<tr>
<th>Strength/Contribution</th>
<th>Missed Opportunity</th>
<th>Recommendations/Opportunities</th>
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<tbody>
<tr>
<td>MAPPA supported research has contributed most substantially towards the assessment of species distribution, range and threat status through the</td>
<td>This has not been accompanied by equal advancements in scientific knowledge on species distribution, genetic diversity or responses to harvest pressure for high priority species. The primary information collected by the majority of MAPPA-supported projects is focused on capturing a</td>
<td>• Explore the technological and/or capacity barriers to the use of field assessments of species distribution.</td>
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MAPPA Midterm Evaluation, 2002
### 5.1.2 MAPPA's contribution to the sustainable and equitable commercialization of MAPs:

<table>
<thead>
<tr>
<th>Strength/Contribution</th>
<th>Missed Opportunity</th>
<th>Recommendations/Opportunities</th>
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<td>MAPPA recommends the formation of ‘biopartnerships’ between community members and industries. Biopartnerships are an improvement on simple buy-back mechanisms, in that they are designed to ensure the equitable sharing of benefits with a higher level of security than simple market interactions.</td>
<td>The MAPPA program has not set parameters or guidelines for acceptable practice in the formation of biopartnerships. Several projects (including SAFE Concern and HPPCL) have initiated informal buy-back mechanisms, but have yet to take the necessary steps to evolve this mechanism into a formal biopartnership.</td>
<td>At a program level, an analysis of the benefits and constraints for local communities participating in various types of formal, binding and long-term contractual agreements should be conducted, taking into account legal and economic considerations. The next conceptual step would be the integration and trial of biopartnerships, which recognize and reward Intellectual Property Rights (IPRs) of the local communities that have contributed to the development of improved methods of production, or innovative uses of medicinal plants.</td>
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<td>Several projects incorporate market analysis for both cultivated and wild-harvested species, as market incentive is a typical criterion for the selection of species appropriate for commercial cultivation.</td>
<td>It is recommended that MAPPA sponsor a consultative study to synthesize the results of, and identify parallels between, the small-scale market studies conducted in the MAPPA projects. Such a study would include a strategy to share the results regarding local market trends with policy makers and international research agencies such as TRAFFIC and the IUCN. In this way, MAPPA can scale-up local level information, and improve its contribution to the documentation on the trade status of MAPs covered by the Convention on International Trade in Endangered Species (CITES).</td>
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<td>Three projects in particular focus on improving processing technology or providing training.</td>
<td>The collection of wild MAPs and local level post-harvest storage are often the responsibility of women</td>
<td>The development of gender sensitive technologies for incorporating the participation of women in primary processing in order to further enhance their livelihood</td>
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MAPPA Midterm Evaluation, 2002
technical support and other incentives for the value-addition of MAP resources. This strategy is intended to enable communities to advance from collection/production of raw materials to capture a greater proportion of the final sale price for biodiversity-based products. in rural communities, providing them with important supplemental income (Karki, 2001:5). Very few projects have conducted detailed social or gender analysis to plan for the setting of priorities that meet gender-differentiated needs and priorities.

5.1.3 MAPPA’s contribution to the improved role of MAPs in the provision of safe and effective health care:

<table>
<thead>
<tr>
<th>Strength/Contribution</th>
<th>Missed Opportunity</th>
<th>Recommendations/ Opportunities</th>
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<td>MAPPA encourages efforts to promote community access to research results through the maintenance of local information/resource centres for instance, and to ensure community benefits by integrating community participation in the research process, through such processes as locally maintained demonstration sites and herbariums. Project proposals indicate that the majority of researchers are interested and committed to the principles of IPR.</td>
<td>None of the projects have created or implemented formal mechanisms for the recognition of the intellectual property of individual healers, or collective/local traditional knowledge. At a minimum, project recipients agree to comply with Ethical Clauses 16 and 17 by signing the Memorandum of Understanding with IDRC. There are obvious concerns amongst project participants regarding who will benefit from the research results and the extent to which continued local access to and control over the documented information will be guaranteed, indicating a need for more clearly articulated and integrated ABS and IPR system. Project reports reflect a lack of expertise necessary to systematically address issues of IPR.</td>
<td>More of an effort should be made towards integrating community benefits and access to project results, with intellectual property issues, especially for projects documenting specialized traditional or local knowledge. It is recommended that MAPPA commission a study to identify potential guidelines for establishing and integrating local IPR and ABS mechanisms, prior to or in conjunction with documenting traditional knowledge. An examination of guidelines used by other organizations or research into alternative mechanisms to intellectual property regimes that ensure benefits to local and indigenous peoples, should be included in such a commissioned study.</td>
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Two projects have focused on providing training and other support to traditional healers, to encourage standardization of treatments, sustainable harvesting of MAPs, cultivation of MAPs for use in their health practice, and improved storage and processing methods. (HFRC project in Andhra Pradesh, and the IIFM project in Bhopal). Activities that create linkages and partnerships between traditional healers and modern primary health care facilities are lacking in the MAPPA program to date. Although support for traditional healers has raised awareness of local options for culturally appropriate and affordable health care in remote areas, there has been little attempt to integrate or recognize the complementary nature of the two health care systems. A formal study of the constraints and barriers to integrating the two systems would aid in developing an organized approach to improving service delivery mechanisms in remote areas. The synthesis of project results regarding the contribution of plant-based tribal medicine to local health delivery arrangements in rural areas, would provide valuable evidence-based information to influence policy related to the regulation of traditional medicine. MAPPA could therefore contribute more substantially to the establishment of state level guidelines and potentially, legal frameworks for the regulation and standardization of traditional systems of medicine, particularly tribal systems.

Several projects have focused on identifying local health care needs, documenting traditional knowledge of plant formulations and standardizing recognized formulations. Conducting safety and efficacy testing through mode-of-action studies, or targeted examinations of efficacy through bioassays or clinical trials were not listed as prioritized activities for MAPPA supported research. Although ensuring the safety and efficacy of traditional plant based remedies was highlighted as a research priority for the region, this has not been a focus for the majority of projects. A rapid assessment of the current pool of MAPPA small grant recipients and the MAPPA program itself, indicates that there is neither the human or material capacity to conduct detailed and long-term studies required to establish efficacy. Should MAPPA desire to directly support research to address safety and efficacy, a targeted attempt to increase partnerships with or provide small grants directly to pharmaceutical research organizations would be needed.
MAPPA’s final two objectives are focused on networking, information sharing, partnership development and capacity building, and are summarized in the following sections.

5.2 Evaluation Objective 3:

To assess the strengths and weaknesses of the small grant approach and determine the extent to which the MAPPA project has enhanced regional networking;

The following section summarizes the strengths and weaknesses of the small grant mechanism, and the extent to which it supports regional networking, followed by several recommendations for improving MAPPA’s contribution to regional information sharing. Issues related to methodologies and MAPPA priorities are included in the discussion around evaluation objective four.

5.2.1 Strengths of MAPPA’s Small Grant Mechanism:

The following strengths were noted for the MAPPA small grant mechanism:

- **Institutional Capacity Building:**
  MAPPA currently provides considerable logistical, technical and research support to partners, particularly in the early phases of proposal and project development. The Coordinator typically visits each project in the early and interim phases of the project cycle in order to conduct monitoring of project activities. Project Leaders have identified this individualized support as a key strength of MAPPA, particularly for building capacity of emerging and small-scale institutions, such as SHER, SAFE Concern and HFRC28. In Nepal, the coordinator has supported strategic planning and collaboration between MAPPA recipients and other non-MAPPA partners by hosting meetings to discuss project activities, methods, results and achievements.

- **Community Capacity Building:**
  The majority of MAPPA supported projects include a component of capacity building of community members and beneficiaries. This is accomplished through partnerships with local organizations and directly through training programs, demonstration gardens maintained by local participants, and information centres for the dissemination of project results. Both formal and informal professional partnerships between MAPPA recipients and local organizations have enhanced local capacity and awareness through the cross-fertilization of ideas, interests, and initiatives.

MAPPA also targets their small grant research to marginalized areas and populations, including tribal peoples, marginalized farmers and women. Three of the four projects visited during the evaluation worked with tribal and marginalized groups. They do not, however, take adequate measures to link with local women’s organizations, or include gender analysis that will identify gender-differentiated priorities, opportunities and needs. Targeted support for training in social and gender analysis from MAPPA is therefore recommended.

- **MAPPA as a Neutral Convenor:**
  As MAPPA is formed as a program of research and not a ‘member organization’ or a formal network, MAPPA is seen as a neutral convenor and the relationships with ‘knowledge partners’

28 See Annex 3: Summary of Project Leader Survey Results
remain mutually beneficial and iterative. One example of this has been MAPPA’s role in the promotion of Medicinal Plant Boards at the state and national levels in both India and Nepal. There is substantial room for improving this

- **Effective Local Level Research and Dissemination:**
The nature of the small grant mechanism facilitates research at the local level for both emerging and established research institutions. This supports the establishment of effective, mutually beneficial and long-term partnerships with local communities and civil society organizations operating in those communities and aids in ensuring the research remains responsive to local level priorities. In the review of a sample set of MAPPA supported projects, the evaluation team noted a strength lies in their reach, which is typically achieved through the engagement of different partners. This was the observed case for projects such as HFRC, SHER, IIFM and SAFE Concern. The degree to which results are disseminated, retained and used within local communities is also a strength of MAPPA supported research.

5.2.2 **Weaknesses/Constraints of the Small Grant Mechanism:**

The following elements are identified as weaknesses, constraints or missed opportunities of MAPPA’s small grant mechanism:

- **Lack of consistent MAPPA protocol for project monitoring and evaluation:**
One general weakness of the MAPPA program has been the lack of consistent monitoring and evaluation requirements from MAPPA. With the exception of preparing final technical reports for submission to MAPPA, very few projects have conducted detailed or consistent project monitoring throughout the project development cycle. Project mid-term and final evaluations that incorporate the perspectives of local communities are also rare. Monitoring often falls under the responsibility of the MAPPA coordinator. Although this accountability check is necessary, more requirements should be in place to encourage project staff to collect evaluation information throughout the program cycle, to reflect on lessons learned and to revisit and improve on methodologies. Monitoring and evaluation of project methodologies and results are essential components of institutional learning and capacity building and should be formally encouraged by the MAPPA program.

- **Short project cycle:**
Several MAPPA small grant recipients identified the short project cycle as a weakness of the small grant mechanism in the Project Leader survey. This, however, is expected for a small grant mechanism, and is addressed by encouraging small grant recipients to broaden their funding base and avoid being dependent solely on MAPPA.

- **Few information sharing mechanisms available between Projects**
The majority of respondents to the Project Leader Survey recommended improved opportunities for collaboration between small grant recipients, as information sharing was found to be centralized and dependent on the role of the MAPPA Coordinator. The original MAPPA proposal prioritized activities to enhance regional cooperation and improve information sharing through workshops and consultations, encouraging collaboration on research projects and cooperation on implementation of national agreements. These activities were also intended to facilitate the discussion and development of new and innovative methodologies, as well as the exchange of results and technologies between small grant recipients and other MAPPA partners.
There have been two explicit opportunities for MAPPA partners and other agencies working in the field to directly share their research experiences and results and set priorities for a regional research agenda. Several project leaders also noted that they were unaware of the names, contact information and major research focus of other MAPPA partners. This is largely due to MAPPA’s current budget being primarily allocated for small grant administration, and not with a provision for networking/information sharing. As such, there is substantial room for improved information sharing and productive partnerships between MAPPA affiliated small grant recipients, that does not necessitate the formation of a ‘member organization’ or formal network.

**Recommendations to improve information sharing**

The following recommendations are suggested in order to improve information sharing between MAPPA supported small grant research projects:

1. **Provide self-sustaining opportunities to improve information sharing directly between MAPPA partners:**

   There is substantial potential for the small grant mechanism to serve as a means for improved information sharing and scaling up of lessons learned between small grant projects. Given IDRC’s presence in the region, the MAPPA program has the benefit of a relatively long history of project results on which to build a cohesive and complementary research program for the region. Providing self-sustaining opportunities to improve information sharing directly between MAPPA partners, rather than through the MAPPA coordinator, would increase the cross-fertilization of ideas with other research partners, the potential of scaling up of project results, collaboration to identify policy targets, and the creation of policy level recommendations based on combined findings.

The following set of recommendations for improved information sharing between small grant recipients emerged from the Project Leader survey conducted during this evaluation. Although these recommendations are suggestions from Project Leaders and do not necessarily reflect the opinion of the evaluation team, they should be considered in planning future phases of MAPPA:

- improve circulation of newsletter to external partners;
- improve Project Leaders’ access to documents from other projects by posting publications and reports on IDRC/SARO’s web page or distributing a list of reports available upon request;
- distribute a list of names, contact information and profiles of MAPPA supported researchers;
- establish an electronic list serve with rotating moderators/chairs and with provision of training in moderating electronic forums;
- investigate potential of joint publication(s), working papers, project papers, focused on methodological lessons;
- investigate the potential of forming an ‘association’ of MAPPA partners to promote regular interaction between MAPPA partners, as opposed to a formal network;
- provide more opportunities for researchers in regions to exchange project experiences – work towards developing self-sustaining connections by hosting regular forums for regional or national partners and encouraging exposure visits across MAPPA projects.

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29 See Annex 2 of this report for detailed results from the Project Leader Survey.
2. **Enhanced Knowledge through synthesis of project lessons and results:**

The respondents to the Project Leader survey articulated a need for new opportunities for researchers to share experiences, discuss best practices, and develop collaborative exercises to identify policy level recommendations pertaining to comparative findings. The synthesis and scaling-up of collective and comparative results would allow the MAPPA program to continue to challenge the evolution of a regional research agenda on MAPs. At present, much of this synthesis and analysis falls on the shoulders of the MAPPA Coordinator. This is an arduous task requiring frequent monitoring visits to each project, and an in-depth understanding of the detailed methods applied in and results produced for each project. It is important to note that despite the disproportionate resources allocated to the synthesis of research results at a program level, and the early stages of the program, the Coordinator has accomplished a great deal in this area. This is indicated by his participation in national policy dialogues and presentation of papers based on MAPPA-supported research at national and regional conferences. The program of research supported by MAPPA in Nepal is demonstrating good progress of moving towards this objective, given its close knit group of researchers, collaborating and sharing best practices. Although the group is not necessarily a formal network, they are provided an opportunity under the MAPPA umbrella, to collaborate.

However, this activity is not sustainable under the current allocation of resources. Experience to date indicates that the building of partnerships, synthesizing community based research for a wider application of results, and lobbying for co-funds are labor and time intensive. As the program matures and produces context specific research results, the coordination and planning of activities for synthesis and reflection of research methods and results will become all the more critical. For this reason, it is recommended that additional resources be dedicated within the MAPPA coordinating Unit specifically to partnership development, collaboration and information sharing between MAPPA partners in the region.

5.3 **Evaluation Objective 4:**

*To identify opportunities for ‘scaling up’ of project results and broader methodological issues;*

‘Scaling-up’ is a term used at IDRC to describe opportunities and mechanisms with which to package, learn from and showcase the successful outputs and methods of programs and projects. Scaling up from community based research for a wider application of results in a way that will have some influence on policy and decision making is an emphasis of most IDRC supported projects and programs.

In the Annual Review of the People Land and Water (PLAW) Program Initiative, Fiona McKenzie and Greg Spendjian, describe the ongoing challenge of ‘scaling-up’:

…in view of the complexity of analyzing relations between people and the environment … one way of ‘scaling up’ would be … to examine small scale events iteratively in relation to larger scale process. The objective of such research would not be to come up with broad generalizations, but to understand the processes at work in terms of land management which change in relation to changes in the broader political economy. From an understanding of the diversity of people’s experiences in specific contexts may come a much more sophisticated understanding of the power relations at play (McKenzie, 1999).

As indicated by McKenzie (1999), ‘scaling up’ is achieved through “…support for the development of networks engaged in parallel research…the objective may not be to generalize, but to share the diversity of experiences in relation to a research topic”. As discussed above,
increasing the linkages established at the regional level by providing improved opportunities for MAPPA small grant recipients to engage and share information will contribute substantially to MAPPA’s goal of scaling up local level research findings.

MAPPA has supported several innovative research projects that have produced results with substantial potential for scaling up. These include:

- **CECI**: Very good opportunity for scaling up of project results and replication of project methodology for establishing sustainable harvest limits and incorporating the participation of local community members in the research process.

- **AVS**: Good opportunity for scaling-up of results around results of cultivation and extension work from Phase I, as well as the relationship between cultivators and industry supported by AVS.

- **SHER**: SHER has met with marked success in domesticating and propagating species such as *Aconitum atrox*, *Aconitum heterophyllum* and *Saussurea costus*, both through root/tuber cuttings and seed germination. The project has successfully produced a complete package of agro-technologies for each of these species, and has offered training in the implementation of a model of mixed-crop cultivation in local communities. The methods used have substantial potential for publication, replication and for scaling up of lessons. SHER’s process and results in the creation of a formal biopartnership between MAP cultivators and industry will provide valuable lessons for other projects working towards establishing equitable sharing of benefits.

- **CECI, SHER and AVS** have conducted detailed phytochemical studies to determine the impact of microclimatic changes from wild to cultivated, as well as under various cropping systems and harvest regimes. The preliminary results from both projects indicate no major change in photochemical properties provided cultivation is implemented either in or around the natural habitats of the targeted species or in ecophysiological conditions that mimic the original habitats of the species being cultivated. Project experiences and results should be scaled-up to inform similar initiatives.

- **SAFE Concern**: The curriculum developed by SAFE Concern is highly replicable in many other project sites.

- **ITI/RITICOE**: the ITI project is focused predominantly on the standardization, improvement of quality, and enhancing the production process and marketability of six Ayurvedic medicines currently produced by RITICOE. There is substantial potential for scaling up of lessons from RITICOE’s approach to transferring technologies for improved processing of raw materials, and mobilizing and involving community members.

### 5.3.1 Methodological Issues:

In addition to scaling up of research results, MAPPA prioritizes the development of innovative research methods and the development of novel technologies specific to MAP related research (MAPPA Appraisal, p.4). MAPPA was planned with the intention of supporting consultancies and internships that would address cross cutting issues such as the impact of local level research on policy development, as well as evaluating lessons learned from the overall approach of the
program. Through the course of the evaluation, several innovative methodologies for scaling up were identified, as mentioned above, as well as or methodological areas requiring further research, support or improvement, including:

1. **Improve capacity for conducting gender and social analysis in projects:**
   Gender and social analysis were intended methodologies for activities, yet few projects have successfully implemented gender analysis or integrated results of a social analysis into project planning. It is recommended that MAPPA provide improved requirements at the program level to incorporate gender issues during the design, implementation and monitoring phases of the project. Currently, the degree to which projects incorporate gender issues, is concentrated around efforts meet a minimum quota of women participating in project activities. It is also recommended that MAPPA encourage projects to collect more gender-disaggregated data for future analysis.

2. **A clearer definition of ‘community-based’ is needed at the program level:**
   MAPPA had intended to directly benefit the rural poor and indigenous communities, and has followed through on this commitment to a large extent. The majority of small grant projects focus on marginalized communities in ‘marginalized’ areas - Himalayas, Western Ghats and Uplands. However, the extent to which projects conduct stakeholder analysis and/or incorporate collaborative planning, implementation and monitoring with project participants varies widely. However, the concept of what constitutes collaborative community participation in the research process varies substantially between projects. In several cases, projects state they use participatory research methodologies, when local people serve merely as research subjects, and have limited opportunities to direct change in the project. As such, a clearer articulation of the definition of the concepts of ‘community based’; ‘community participation’ and ‘community-based’ is required at the program level.

3. **Impact assessment of the ‘conservation through cultivation’ approach required:**
   A further point of methodological significance in MAPPA concerns the question of conservation through cultivation and domestication. There is growing concern amongst several research agencies focused on conservation that the promotion of cultivation does not necessarily prevent or reduce harvesting of wild materials, nor does it consistently result in equitable sharing of the benefits of MAP marketing. Reluctance is based on the concern that...
   - disproportionate benefits may result from the project in favour of landholding and prosperous farmers with irrigation and other external inputs;
   - introducing new markets for cultivated MAPs may provide an incentive for landless and/or marginal farmers to increase their harvest from the wild, resulting in over-harvesting of high-demand species;
   - increased competition from landholding farmers growing high-demand MAPs may displace groups which have traditionally harvested medicinal plants for a niche market, typically women, marginalized or landless groups, and thereby reduce their livelihood options.

MAPPA has attempted to address this concern by supporting projects that develop gender sensitive cultivation technologies such as homestead and kitchen garden cultivation, as in the HFRC project. However, this strategy should be paired with more support for building capacity amongst MAPPA recipients in the use of social and gender analysis tools, in order to gauge the social and economic impacts of domestication and cultivation. More synthesis is required to understand the specific conditions under which cultivation and domestication of MAPs is, or can be effective at conserving biodiverse resources, reduce harvest pressure on wild resources while ensuring equitable access to biodiverse resources. Given the wealth of experience in the MAPPA supported research projects, MAPPA is well positioned to develop a coherent and rigorous
framework for researching the relationship between conservation, equitable access to biodiversity resources, and domestication and cultivation of MAPs.

4. Investigation of integrated ABS/IPR mechanisms required:
Project proposals indicate that the majority of researchers are interested and committed to recognizing the intellectual property rights of traditional and local communities. However, project reports reflect a lack of expertise necessary to systematically and formally address these issues. As such, more of an effort should be made towards integrating community benefits and access to project results, with intellectual property issues, especially for projects documenting specialized traditional or local knowledge. This is particularly important considering the number of projects with an emphasis on commercialization of herbal medicinal products and the explicit interest in developing equitable partnerships with industry. It is therefore recommended that MAPPA commission a study to identify potential guidelines for establishing and integrating local IPR and ABS mechanisms, prior to or in conjunction with documenting traditional knowledge. An examination of guidelines used by other organizations, or research into alternative mechanisms to intellectual property regimes that ensure benefits to local and indigenous peoples, should be included in such a commissioned study.

5.4 Conclusions
This mid term evaluation has served to highlight several of MAPPA’s key program strengths, and to identify areas in which MAPPA has contributed substantially to the field in terms of advancing innovative methodologies and producing leading edge research results. Through the systematic analysis of the contribution of its portfolio of projects toward each of the program objectives, the evaluation has highlighted gaps and hence set priorities for future project development. The evaluation has also highlighted general areas of improvement/refocus to be considered for the remaining implementation period of the program.

There are four key areas in which MAPPA could refocus in order to build on existing strengths, meet current objectives and enhance its contribution to the field. These areas are:

- enhancing the mechanisms/forums for MAPPA partners (small grant recipients) to collaborate in order to set shared priorities for conservation, share information relevant to methodologies, approaches and best practices;
- improving the required process for projects to conduct policy analysis, identify local, state and national policy constraints to conservation, create policy directives based on collective, scaled-up results, and ultimately create a policy environment conducive to conservation;
- improving resources available to project teams for conducting social and gender analysis and use new capacity to assess the social, economic and conservation impacts of the domestication and cultivation of MAPs;
- Investigating and developing mechanisms for integrating community benefits and access to project results, with intellectual property issues, especially for projects documenting specialized traditional or local knowledge.

While it is difficult at this stage to rigorously evaluate the success of MAPPA in terms of meeting its five main goals, it is clear from the evaluation visit, the review of project documents and the Project Leader survey, that MAPPA is providing an essential service in the field of medicinal and aromatic plant research in Asia. Its provision of support to emerging research, grassroots organizations has resulted in the generation of key research results that have informed policy and decision making at national and state levels, while also addressing local priorities related to health, livelihoods and access to biodiverse resources.
In that MAPPA is formed as a program of research and not a ‘member organization’ or a formal network, MAPPA is seen as a neutral convenor and the relationships with ‘knowledge partners’ remain mutually beneficial and iterative. In this sense, the MAPPA program has succeeded in developing a regional reputation as a research program with effective convening power, in that it can build on comparative findings from grassroots research initiatives and contribute constructively to policy debates.

MAPPA is therefore well positioned to move into its next programming phase. With improved opportunities to collaborate between small grant recipients in order to synthesize and analyze collective research results, the collection of research projects could grow into a regional corps of research with substantial potential to influence policy and decision making in the region.
# 6.0 Annex 1 – MAPPA Objectives, Proposed Activities and Expected Outputs

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<tr>
<th>MAPPA Objectives</th>
<th>Principal Components / Key Issues</th>
<th>Types of Proposed Activities</th>
<th>Targets/ Reach</th>
<th>Expected Outputs / Results</th>
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<tr>
<td>1. To support strategic research on community-based initiatives for genetic conservation and sustainable management of medicinal and aromatic plants;</td>
<td>Genetic Conservation Sustainable Management</td>
<td>1. Assessment of range and distribution of species for selected major eco-geographic regions in South Asia;</td>
<td>Contribution to conservation literature and field of research; Evidence of the participation of community members and institutions in the design, implementation and evaluation of local projects;</td>
<td>1. Methods, options and strategies for sustainable use and equitable management of MAPs; 2. Manuals, guidelines for sustainable harvesting of prioritized species; 3. CAMP based prioritization of MAP species for research; 4. Cultivation technology and quality plant materials production of priority species; 5. Assessments of resources distribution and use of MAP resources in key eco-systems; 6. Research information on genetic improvement strategies; 7. Training of local harvesters, resource managers and researchers in sustainable harvesting techniques; 8. Local national and regional strategy, options and policy information for sustainable conservation of MAPs; 9. Gender based differences and benefits in MAP based activities and research strategies to address them (Proposal p:vii)</td>
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<td>Community-based: involvement of local people in project decision making.</td>
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<td>2. To promote innovative resource utilization and management strategies involving local people, especially rural poor and tribals, to derive more equitable benefits from medicinal and aromatic plants and derived products;</td>
<td>Sustainable and Equitable Commercialization</td>
<td>1. Evolution and implementation of formal and informal &quot;biopartnerships&quot; between local communities and industry to promote equitable benefit sharing practices;</td>
<td>Development of protocols for 'biopartnerships' which demonstrate equitable sharing of benefits with local communities; Concept of ABS explicitly stated and operationalized within the project cycle;</td>
<td>1. Partnership based MAP conservation projects participated by industry and rural communities; 2. Study on standardization and quality control of raw materials and plant based drugs; 3. Increased flow of information on trade and commercial activities to local people; 4. Study on impact of commercialization on local health care system especially on women and tribal groups. (Proposal p:vii)</td>
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<td>Equity: involvement of marginalized groups</td>
<td>2. Development and training of improved storage... marketing of MAP products among rural communities with an emphasis on improving conditions for women</td>
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<td>Benefit sharing: support of MPs in livelihoods,</td>
<td>3. systematic gender analysis ...</td>
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<td>4. standardization of raw materials ...</td>
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<td>(Proposal p.16-17)</td>
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<td>3. To support strategic research on improving access to, and use of,</td>
<td>Improved Options for safe and effective health care</td>
<td>1. Assessment of impacts of commercialization of maps on local health systems; 2. Development of strategies to understand</td>
<td>Collaboration with formal government health infrastructure and institutions;</td>
<td>1. Greater understanding of constraints to traditional systems of medicine (TSM); 2. Training of local healers and community</td>
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<td>medicinal and aromatic plants as a means of safe and effective primary health care;</td>
<td><strong>Safe and Effective:</strong> promotion of established remedies, standardization and quality control of preparation of herbal remedies, documentation of TSM.</td>
<td>local health care needs and develop approaches to improve delivery of safe, effective and affordable health care (Proposal p.19)</td>
<td>Influence of policy and decision making regulating use of TSM; Raise awareness of TSM options at a local level, particularly where few primary health care options exist.</td>
<td>members in improving the use of and production of safe and effective plant-based medicine; 3. Support to efforts to develop good manufacturing practices of traditional drugs to supply safe and affordable drugs for rural people; 4. Promote networking and communication among local health organizations. (Proposal p.vii)</td>
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<td><strong>Information sharing/Communication:</strong> information sharing mechanisms in projects</td>
<td>1. Regional collaboration: with non-MAPPA programs, co-funding, joint activity planning, information sharing, coordination of activities leading to meaningful debate and reforms in national policy and legislation; involvement in national and international agreements; logistical and research support to partners; support regional consultations and workshops (Proposal p. 21)</td>
<td>1. Inform policy makers of relevant research results; 2. Involve local policy/decision makers in the project progress; 3. Ensure the access of local community members to the outputs and results of the research through dissemination and information sharing at the community level.</td>
<td>Regional Consultations and workshops on: 2. Strategies for MAP Conservation 3. Gender Mainstreaming in MAP activities 4. Sharing Experience in Sustainable use and Conservation of MAPs 5. CAMP workshops in Bhutan, Nepal and Pakistan to develop a list of prioritized species. (Proposal p. 23)</td>
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<td><strong>Closing the loop:</strong> involvement of decision/policy makers in project/program</td>
<td>Information Dissemination: 1. Promotion of information exchange, dissemination and management through contact, conferences and workshops; Newsletter;</td>
<td>1. Evidence of new initiatives inspired by MAPPA program; 2. Increased cooperation between communities and government at project sites, with tangible benefits to conservation and development 3. Successful development of research capacity in developing countries;</td>
<td>1. Development of technological expertise (e.g. in situ conservation methods, propagation techniques, technological know-how of primary processing, storage and harvesting) 2. Greater institutional cooperation and commitment to conservation and sustainable use of maps, nationally, and regionally; 3. Partnership with local organizations to produce a newsletter – MAPPA will collect, edit and send information for publication focused on concrete field experiences and items for discussion and debate. 4. Support from MAPPA for the publication of research results in local, national and regional for a targeting researchers as well as policy makers 5. Dissemination of training manuals, research guidelines and workshop proceedings.</td>
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<td>4. To support better access to, better broader distribution and greater utility of information about medicinal and aromatic plants through networking and communication; and</td>
<td><strong>Capacity building:</strong> at two levels – institutional via productive partnerships, opportunities for research learning etc; and beneficiaries/ community members through the provision of local skills enhancement, training opportunities, and improved access to biodiversity resources.</td>
<td><strong>Capacity building:</strong> 1. Support local institutions to impart practical training in MAP cultivation, primary processing and marketing; 2. Target women and tribal people in training; 3. Aim at enhancing the capacity of local NGOs or CBOs in simple propagation methods in ex situ conditions, sustainable harvesting techniques, simple processing and marketing of MAP products; (Proposal p. 23) 4. Development of institutional technological capacity through training programs, promoting researchers’ participation in courses, workshops, exchanges, and internships; (Proposal p.25) 5. Funds will be earmarked to grassroots institutions in order to build local research capacity and long-term national and regional capacity to sustain research and networking initiated by the project.</td>
<td>1. Evidence of new initiatives inspired by MAPPA program; 2. Increased cooperation between communities and government at project sites, with tangible benefits to conservation and development 3. Successful development of research capacity in developing countries;</td>
<td>1. Development of technological expertise (e.g. in situ conservation methods, propagation techniques, technological know-how of primary processing, storage and harvesting) 2. Greater institutional cooperation and commitment to conservation and sustainable use of maps, nationally, and regionally; 3. Partnership with local organizations to produce a newsletter – MAPPA will collect, edit and send information for publication focused on concrete field experiences and items for discussion and debate. 4. Support from MAPPA for the publication of research results in local, national and regional for a targeting researchers as well as policy makers 5. Dissemination of training manuals, research guidelines and workshop proceedings.</td>
</tr>
<tr>
<td>5. To promote partnerships, capacity building and institutional commitment to sustainable use and production of medicinal and aromatic plants through enhanced regional cooperation, training and research in the South Asian region</td>
<td><strong>Partnerships/Cooperation:</strong> strategic planning, prioritization, no duplication of efforts.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.0 Annex 2 - Case Studies

7.1 Case Study #1: Indian Institute of Forest Management (IIFM)

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Community Based Sustainable Management of Medicinal Plants in Madhya Pradesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator</td>
<td>Dr. Pradyut Bhattacharya</td>
</tr>
<tr>
<td>Research Associates</td>
<td>Mr. Bhaskar Mitra (Ph.D. Scholar)</td>
</tr>
<tr>
<td>Small Grant Amount</td>
<td>$26,021.00 (CND)</td>
</tr>
<tr>
<td>Location</td>
<td>Betul District, Madhya Pradesh</td>
</tr>
<tr>
<td>Duration of the project</td>
<td>May 1999 – November 2001 (Two years)</td>
</tr>
</tbody>
</table>

7.1.1 Summary

The project began under MAPPA’s first phase in 1999, with a small grant of $26,021 (CND). The IIFM is a well-established academic and research organization focused on forest management and conservation, offering academic and professional training courses in forest management and sustainable NTFP management for rural development. Although the original intention of the project was to develop cultivation methodologies, the more substantial focus has been on documenting traditional knowledge related to the use of MAPs in traditional health care and supporting traditional healers through the establishment of a traditional healers’ network. The present status of the project is uncertain, as funding ended in November 2001, yet it has neither terminated (with a final progress report) nor been extended or renewed. The four day project visit occurred in early January and consisted of detailed interviews with project staff and partner agencies, as well as focus groups and interviews with local healers participating in the project. The evaluators visited two kitchen gardens maintained by local healers, a forest monitoring plot owned and managed by the local forest department, the field of a farmer cultivating MAPs with assistance from the project, and a demonstration site/garden for training in cultivation and identification of MAPs.

7.1.2 Project Objectives:

1. To gather information and assess the ecological and socio-economic status of medicinal plants in the project area.
2. To prioritize and select five medicinal plant species with high local value and commercial demand for cultivation.
3. To test and develop models of cultivating MPs in degraded forest being covered under JFM.
4. To study the impact of present conservation and harvesting systems on production and biodiversity status of medicinal plants.
5. To collect and analyze information regarding survival, collection, marketing and potential for value added processing of Medicinal Plants (MPs) cultivated and collected.
6. Based on the analysis of data, to recommend a holistic model for promoting cultivation of medicinal plants in degraded forests.

7.1.3 Field Observations related to Objectives

Project activities are focused predominantly in four hamlets\(^{30}\) of one village, Kanhawadi, in Betul District of Madhya Pradesh. The population in the village is predominantly tribal, with 70% of the population from the Gond tribe, and 20% from the Gauli tribe, while approximately 5% of the population are Muslims. Project staff indicated that the forested area in the village has come under intense harvesting, resulting in the clearing of many of the main forests in the area. Unlike in many other forested areas in the state, collection of medicinal herbs for commercial purposes is conducted in a systematic way in the Kanhawadi area. However, medicinal herbs are collected from the forest by traditional medicine men as well as ordinary villagers for local uses.

Objective 1

*To gather information and assess the ecological and socio-economic importance of medicinal plants in the project area.*

The IIFM has conducted an ethnobotanical survey of traditional healers, women and the elderly and have identified approximately 200 plant species being used for medicinal and therapeutic purposes. An ethnobotanical survey in the project area has been conducted with the assistance of 10 Bhagats (traditional herbal healers), inhabiting Kanhawadi and adjoining villages. It was revealed that most plants/parts are used in combination with other plants/parts, i.e. most of the herbal preparations consisted of two or more plant parts. Also, plant parts most frequently used in treatments are underground parts (like root, tuber, rhizome, etc.) and bark. Based on the information collected during the surveys, the project has produced a list locally available and used medicinal plants with socio-economic importance, the parts used, harvest methods, and mode of use.

The project has also supported the establishment of a Herbal Healers Network, through which they have promoted the use of Patient Profile Registers, to document the disease/symptom treated and the plant-based drug prescribed, the patient's personal details, age, history of illness, etc. Although the project is not systematically documenting local criteria for choosing health care treatments, they are contributing to the documentation of common ailments in the project area and the preferred plant-based treatments commonly used by traditional healers. Project staff have noted that collecting detailed information from traditional healers is a particular challenge to the research. Staff have addressed this challenge by supporting the exchange of knowledge between traditional healers, rather than an external flow of information from individual healers to project staff. The project has established a MAP Information Centre, which provides information on the identification and use of MAPs in the region. The Centre is housed in the local community and is maintained by two individuals who have participated in IIFM supported training. Therefore, by ensuring that information collected during the ethnobotanical survey is returned to or retained within the community has built confidence that knowledge sharing is mutually beneficial.

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\(^{30}\) The four hamlets are: Bada Dhana, Beech Dhana, Gauli Dhana and Imli Dhana.
Objective 2

To prioritize and select five medicinal plant species with high local value and commercial demand for cultivation.

A study of the local market and climatic conditions was conducted in order to inform the selection of species with a high market demand, to be recommended for cultivation. Five species with local demand were selected (Aonla/Indian gooseberry) (*Phyllanthus emblica*), mentha (*Mentha arvensis*), aswagandha (*Withania somnifera*), sanai (*Mucuna pruriens*), and dedawal and promoted for cultivation with local farmers. For each species, the research team conducted a cost benefit analysis to determine the rate of return for species under commercial cultivation. The results of the market studies were shared with participants through training programs and an information centre maintained by project participants.

In order to develop models for cultivating medicinal plants in degraded areas and on private land, the project supported the development of a demonstration garden in October, 1999 in Kanhawadi village. The plot was approximately 2400 square meters and was provided by a local healer. The objectives of the plot were:

- to train villagers in the identification of important and frequently used medicinal plant species in order to encourage their conservation in the forest;
- to initiate *ex-situ* conservation of important medicinal plant species;
- to encourage and facilitate villagers to cultivate these plants in their home yards.

Approximately 35 species of medicinal plants were planted in the demonstration plot, including those outlined in Table 5.

**Table 4: Plants included in IIFM demonstration site in Betul District.**

<table>
<thead>
<tr>
<th>Hindi Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safed Musli</td>
<td><em>Chlorophytum tuberosum</em></td>
</tr>
<tr>
<td>Sarap Gandha</td>
<td><em>Rauvolfia serpentina</em></td>
</tr>
<tr>
<td>Aswagandha</td>
<td><em>Withania somnifera</em></td>
</tr>
<tr>
<td>Satavar</td>
<td><em>Asparagus racemosus</em></td>
</tr>
<tr>
<td>Sanai</td>
<td><em>Mucuna pruriens</em></td>
</tr>
<tr>
<td>Jangali pyaz</td>
<td><em>Urgenia indica</em></td>
</tr>
<tr>
<td>Aonla</td>
<td><em>Phyllanthus emblica</em></td>
</tr>
<tr>
<td>Lemongrass</td>
<td><em>Cymbopogon citratus</em></td>
</tr>
<tr>
<td>Pudina</td>
<td><em>Mentha arvensis</em></td>
</tr>
<tr>
<td>Bach</td>
<td><em>Acorus calamus</em></td>
</tr>
<tr>
<td>Kali Musli</td>
<td><em>Curculigo orbiculoides</em></td>
</tr>
<tr>
<td>Gokhuru</td>
<td><em>Tribulus terrestris</em></td>
</tr>
<tr>
<td>Aak</td>
<td><em>Calotropis procera</em></td>
</tr>
<tr>
<td>Baryari</td>
<td><em>Sida acuta</em></td>
</tr>
<tr>
<td>Neem</td>
<td><em>Azadirachta indica</em></td>
</tr>
<tr>
<td>Bel</td>
<td><em>Aegle marmelos</em></td>
</tr>
<tr>
<td>Jangali Bhindi</td>
<td><em>Abelmoschus esculentus</em></td>
</tr>
<tr>
<td>Aparajita</td>
<td><em>Clitoria ternatea</em>, etc.</td>
</tr>
</tbody>
</table>

During the evaluation visit, project staff indicated that the demonstration site had proved successful during the wet season, but suffered considerably from drought in the dry season.
Although the demonstration garden was used effectively for the purposes of training in plant identification, project documents do not provide evidence of testing for the optimum agrotechnologies for cultivation of specific species, or improved harvest levels etc. It is therefore recommended that the project improve documentation of the methods used to develop cultivation models, and the results of each trial.

At the time of the evaluation visit, approximately four villagers had initiated cultivation of MAPs recommended by the project, including mint (Mentha arvensis); Lemongrass (Cymbopogon citratus) and Aonla, (Phyllanthus emblica). The four farmers cultivating mentha obtained sufficient income from the first crop, which was supported by adequate rain in the first year. However, in the second year, the crop suffered losses due to drought. Other crops, such as Aonla (Phyllanthus emblica) required a longer establishment period of three years before harvesting. A small number of farmers with irrigation facilities had planted approximately 150 seedlings of Aonla in their degraded lands and are hoping for a profitable harvest after the establishment period. Based on past experiences, efforts are being made by the project to promote species that thrive in dry habitats, including Safed Musli (Chlorophytum tuberosum), Sarap Gandha (Rauvolfia serpentina), Aswagandha (Withania somnifera), Satavar (Asparagus racemosus), Sanai (Mucuna pruriens), Jangali pyaz (Urgenia indica) and Aonla (Phyllanthus emblica).

Due to extreme drought conditions of the project area, a shortage of permanent water flows in brooks and streams, and a shortage of means to harvest underground water and other irrigation facilities, the possibility of developing medicinal plants as a farm crop seems remote. In one hamlet with only 10 households, Arjungondi, the state irrigation department has constructed a dam at the expense of Rs. 3,50,000. The conserved water is used for irrigation as well as for other domestic purposes. Given it’s access to irrigation, Arjungondi may prove to be a suitable area to promote the small-scale commercial cultivation of less drought tolerant, but high demand species such as mentha.

Although the project has met with limited success in the promotion of cultivation of specific MAPs, IIFM staff have served as liaison between farmers in the area for the establishment of an informal buy-back arrangement. One large-scale farmer with experience in cultivating MAPs for the district market had agreed informally to purchasing the harvest from smaller scale productions in the area.

**Objective 3**

*To test and develop models of cultivating MPs in degraded forest being covered under JFM.*

The project has met with limited success in its objective of developing and cultivating high value medicinal plants in degraded forest areas for two key reasons. The project design was flawed, in that the area had been experiencing severe drought conditions for the previous 2 years, and several of the plants promoted required irrigation for establishment. In addition, commercial cultivation of medicinal plants in forested land was not permitted under the Government and Forest Department’s rules and regulations (not permitted under FCA 1980). Regeneration and enrichment planting in the natural forest is permissible, although these activities are not priorities of the project as it is currently articulated. Ideally, both of these circumstances would have been identified and addressed prior to the design of the project and the recommendation of cultivation.
Objective 4

To study the impact of present conservation and harvesting systems on production and biodiversity status of medicinal plants.

In order to document the state of medicinal plants in local forest, the project negotiated a collective initiative with the local Forest Department to establish a one-hectare monitoring plot, with 10 sub-plots of 400 square meters each in a local protected forest area. Within the sub-plots, the area was demarcated for shrubs (25 square metres) and herbs (1 square metre). The plots were used to document the seasonal growth rates of medicinal plants in their natural habitat, but did not include detailed studies on the impacts of specific harvesting regimes or conservation efforts. Baseline information collected from each monitoring plot included species populations, density and seasonal growth rates of herbs, shrubs and trees. The plots are monitored three times per year in different seasons. One year of monitoring has been completed.

Given that the plots are not used to monitor the impact of specific harvesting regimes, the objective of studying the “impact of present conservation and harvesting systems on production and biodiversity status” is not in essence, being achieved. The project is monitoring growth rates of individual species, but has not documented the impact of intervention in the control plot. In order to achieve this objective, it is recommended that future data collected from the monitoring plots include information regarding the impact of reintroduction and regeneration efforts for specific species, as well as monitoring the impact of specific harvesting regimes on the population status of select medicinal plants in their natural habitat.

Objective 5

To collect and analyze information regarding survival, collection, marketing and potential for value added processing of Medicinal Plants (MPs) cultivated and collected.

The IIFM project staff have documented local and traditional ecological knowledge regarding ‘low-impact’ harvesting, and are supporting its reintegration into the practice of NTFP collectors and herbal practitioners. This is accomplished through training sessions and by printing the instructions for low-impact harvesting in the local language on identification cards for the members of a local herbal healers network. Standardized methods recommended by the project, all largely based on traditional knowledge include:

- No more than 50% of the bark is suggested to be removed from a tree / plant.
- In case of plants having multiple tubers, 50% of them could be harvested.
- In case of plants having a single tuber, its major part can be harvested carefully without injuring the plant.
- Seeds should be harvested only after they are mature. Enough seeds should be left to facilitate natural regeneration.
- Only fully developed and mature leaves should be harvested. Leaves should not be harvested during the dry season.
- Fruits should be hand-picked. Branches should not be lopped to harvest plant parts to ensure optimum production in the next season.

Although the project has identified a unique mechanism for training and technology transfer of low-impact harvesting methods, the methods being recommended by the project have not undergone testing and verification prior to their transfer. The sustainable harvesting methods, although intuitively logically, are applied to all species and include such generic recommendations as harvesting seeds and leaves only when they are mature, and not in the dry
season. Other recommendations, such as harvesting a maximum of 50% of the bark or tubers should be verified in field trials for specific species prior to their promotion. The benefits of promoting generic recommendations for harvest limits, without considering the full range of necessary species-specific information, is not yet clearly established. More detailed information for select species, such as knowledge of reproductive and population ecology, distribution and abundance, and the effects of habitat disturbances other than harvest, (Leaman, et al, 1999. Section 2:14) should be documented prior to establishing and promoting harvest methods.

Project staff have also collected detailed information on the crop cycle for 11 plant species, including flowering time, fruiting time, useful part, method of harvesting and other management practices, but have not yet determined the impact of collection practices on species regeneration. Cost-benefit analysis have been conducted for three medicinal plant species, Pudina (*Mentha arvensis*), Buch (*Acorus calamus*) and Kalihari (*Gloriosa superba*). A preliminary market study has also been conducted identifying local and regional markets and market channels. This information, along with 70 medicinal herb samples, and 43 herbarium specimens, is maintained and shared through the IIFM supported Medicinal Plant Information Centre.

The project has supported three training opportunities focusing on the identification, conservation and sustainable use of natural plant resources included 45 high-level forestry-related personnel like foresters, NGO people and academic people. Two village-level workshop / training programs, each with 25-30 participants, have been accomplished. The program included class room discussion as well as field-based studies. In addition, two community members who were apprenticing with a respected local healer, Bhagat Baba, were sponsored by the project to participate in a three week training program on "Entrepreneurship Development in Medicinal Plants" held by the Centre for Entrepreneurship Development in Medicinal and Aromatic Plants (CEDMAP) at Betul, the district headquarters.

**Objective 6**

> Based on the analysis of data, to recommend a holistic model for promoting cultivation of medicinal plants in degraded forests.

A forest plot was identified for in situ conservation in the first year, but regeneration and enrichment planting was not started. Also, a model for cultivation of MAPs was recommended for degraded areas, but not in forests, given the Forest Department’s ban on agro-forestry cultivation (see Objective Three for more information). Given that the recommendation of cultivation of MAPs has met with limited success, and is a viable option only for farmers with access to irrigation, it is recommended that the project shift it’s focus to the promotion of regeneration in forested areas. This is particularly important, given the substantial contribution of wild-harvested MAPs and other NTFPs to local livelihoods. As such, the development of an enhanced model for regeneration of MAP populations in local forests in combination with sustainable harvest studies is recommended.

**7.1.4 Additional Project Activities**

An additional achievement of the project that was not articulated in the original project objectives, was the establishment of a local network of traditional healers. Approximately 50 traditional healers, from over 20 different villages have been identified in the project area and are interested in participating in the network. Among these, 15 prominent healers have been
registered as network members, and each healer has been provided with an identity card by the project, which verify the healers have met basic training requirements established by their peers. The healers registered in the network meet once a month in different villages on rotational manner. Issues pertaining to health, disease, use, availability and conservation of medicinal plants are prioritized in these gatherings although other common issues and general village problems are often discussed. Medicinal plant collectors also attend these meetings on occasion, and have expressed an interest in a similar identity card system for collectors. Collectors will be issued identity cards after they have participated in training on the identification of medicinal herbs, methods of sustainable harvest and post-harvesting procedures.

The network supports improved information sharing between traditional healers in the district. The network is also used as a mechanism to provide ‘training-of-trainers’ in that it provides training to recognized healers in the identification of wild medicinal plants and their useful parts, methods of harvesting, diagnosing common diseases, preparation of herbal drugs and modes of their administration. These healers are then encouraged to train at least 3 apprentices from the area. The Network Management Committee consists of a Chairperson, a vice-Chair person and two joint Secretaries who facilitate the monthly meetings. Participating healers are encouraged to maintain a patient profile register, which is used to document the disease/symptom and the plant drug prescribed, as well as the patient's personal details, age, and history of illness.

Through the participating healers, the project has documented traditional systems of information exchange, local protocols for training and apprenticeship within the local system of medicine, and has developed new locally acceptable mechanisms for standardizing practice, such as peer review of specific healers and their practice. Through the development of the Herbal Healers Network, the project is supporting the improved delivery of culturally appropriate and affordable health care by supporting the training of and information sharing between traditional healers. Given that this was not an original objective, the project has shifted focus, from conservation through domestication and cultivation, towards developing and supporting alternative, MAP-based health delivery mechanisms.

### 7.1.5 Constraints and Weaknesses of the Project

Three of the project’s six original objectives focused on developing and recommending models for the cultivation of MAPs, either on private land, or in degraded forest areas. This was based on the rationale that cultivation of high-value medicinal plants could contribute to increasing the presently low average family income throughout the district, and provide a viable alternative to the overharvesting of uncultivated medicinal plants. Although an attempt was made to address local concerns regarding livelihoods, the project would have benefited from further preliminary research prior to the promotion of cultivation models, such as an assessment of necessary versus available infrastructure, basic inputs such as irrigation facilities, adequate land holdings, climatic and ecosystem features, and/or alternate sources of income in the district. The drought prone nature of the project site should have been an early factor in the selection of plants for cultivation. Similarly, local legislation should have been thoroughly investigated prior to the design of a project objective to promote cultivation of MAPs in forested areas. In addition, the needs/perspective of women, landless and marginalized farmers were not directly incorporated into the project. Given the substantial contribution of wild-harvested MAPs to the livelihoods of marginalized community members, the project would have been strengthened by systematically developing sustainable harvest methods and limits and improving processing efficiency and storage, as well as documenting local perceptions of species scarcity or abundance, threats to conservation and local conservation practices.
This also provides a rationale for the project to move away from recommending intensive cultivation of MAPs, and focus on regeneration of threatened or high demand species in local forested areas.

### 7.1.6 Recommendations

1. **Given the limitations involved with recommending models of cultivation on private lands, and the significant contribution of wild-harvested MAPs to local livelihoods, it is recommended that future phases of the project focus on documenting and transferring sustainable harvest methods and limits for key species, researching improved post-harvest and storage methods, as well as improved local processing and production of herbal treatments that are to be used locally. This should be combined with a social and gender analysis in order to customize new strategies and technologies to different gender-differentiated needs, interests, and responsibilities. Based on the results of the social and gender analysis, the project will be better positioned to determine new approaches and activities in the next phase of the project that will more directly meet the needs of the broader community.**

2. **The project is well positioned to test the collection methods used by local healers and collectors, given that the project has already established a detailed regime for monitoring MAPs in a protected forest area and has buy-in from local community members and the local Forest Department for the monitoring plots. It is therefore recommended that the study broaden the scope of data collected at the monitoring plots to include sustainable harvest studies, and reintroduction and regeneration studies. The project should attempt to involve community members in the research process, by involving them in the maintenance and measurement of the monitoring plots.**

3. **Given the project’s focus on documenting traditional and local knowledge related to the medicinal properties of local plants, it is recommended that the project explore options for formalizing an integrated IPR/ABS mechanism that recognizes the intellectual property of local communities documented through ethnobotanical surveys and patient profile registers. The project has already informally ensured that the benefits and results of the research are shared with the participating communities. This has been accomplished through the development of the Medicinal Plant Information Centre, which is maintained and updated by local villagers, and by the establishment of the Herbal Healers Network, which ensures that information and knowledge is retained and evolved within the original community. However, these mechanisms for community access to the outputs of the research, and their share in the benefits of the research, should be combined with mechanisms to recognize the intellectual property of both individual healers, and the community.**

4. **The project is also well positioned to document local criteria for choosing health care treatments, through the use of the patient profile registers. This information could be used to support the integration of traditional health practices, allied through the Herbal Healers network, with formal primary health care mechanisms operating in the district. In this way, the project could contribute substantially to an intended activity outlined in the MAPPA proposal.**
7.1.7 General Conclusions

Given the constraints associated with recommending models of cultivation in this example, the project should reconsider its objectives of introducing and promoting models for the cultivation of medicinal plants both on private land and in degraded areas. The project has already shifted away from this direction, towards an emphasis on supporting health delivery mechanisms as well as knowledge sharing and peer review by traditional healers. For the following phase, the project is therefore well positioned to research into:

- Standardizing the preparation and administration of herbal treatments;
- Improving health delivery mechanisms and collaboration between formal public health outreach and the practice of traditional herbal healers;
- Documenting local criteria for health practitioners;
- Improving post harvest storage of MAPs and local level processing as options for introducing sustainable biodiversity-based livelihoods in the district.

The project has already shifted away from a focus on conservation through cultivation, towards researching mechanisms for improving local access to culturally appropriate and affordable health delivery mechanisms. By combining this with raising awareness of conservation issues, the project has established a clear link between the conservation of medicinal plants with primary health care delivery. Although the implementing agency (IIFM) has substantial capacity for research on resource/forest management issues, it is not well positioned to support research on establishing safety and/or efficacy of MAP-based remedies. It is therefore not recommended that the project shift focus again, towards documenting the safety and efficacy of traditional therapies, but rather support research which improves the supply-side management of the resource.

Finally, there is a good opportunity to scale-up and replicate the project’s model Herbal Healers’ Network, particularly in the use of identify cards and patient profile registers and in the creation of a local network that is self-defined and self-managed by members.
### 7.2 Case Study #2: Society for Himalayan Environment Research (SHER)

<table>
<thead>
<tr>
<th><strong>Project Title</strong></th>
<th>Conservation and Cultivation of Medicinal Plant in Mountain Area of Garhwal Himalaya</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principal Investigator</strong></td>
<td>Dr. A. K. Badoni</td>
</tr>
<tr>
<td><strong>Research Associates</strong></td>
<td>Mr. Mukesh Prasad Bahuguna, Mr. Bhagawati Prasad Gaur</td>
</tr>
<tr>
<td><strong>Other associates</strong></td>
<td>Mrs. Kiran Badoni, Miss Sarita Sapkota, Mr. Chandra Singh Rawat</td>
</tr>
<tr>
<td><strong>Small Grant Amount</strong></td>
<td>23,775 (CND)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Uttarkasi district, Garhwal region, Uttaranchal, India</td>
</tr>
<tr>
<td><strong>Duration of the project</strong></td>
<td>Two years (April, 1999 - March 2001)</td>
</tr>
<tr>
<td><strong>First extended date</strong></td>
<td>September 24, 2001</td>
</tr>
<tr>
<td><strong>Second extended date</strong></td>
<td>April 24, 2001</td>
</tr>
<tr>
<td><strong>Third extended date</strong></td>
<td>February 24, 2002 (no-cost extension proposed by IDRC (MAPPA), if needed).</td>
</tr>
</tbody>
</table>

#### 7.2.1 Summary

MAPPA awarded SHER with a small grant of $23,775 in April 1999 for a two-year project focusing on the domestication and cultivation of high altitude, and high-demand medicinal plants in the Uttarkasi district, Garhwal region, Uttaranchal, India. The project area and the targeted villages lie entirely within a protected area entitled the Govind Wildlife Sanctuary and National Park. The four-day project visit was conducted between January 13-17, 2002, at which time project staff were in the process of preparing the final technical report for submission to MAPPA. The project was visited by both evaluators and consisted of detailed interviews with all project staff, and 10 local participants, 5 of which were women. The evaluation team also visited one of three nursery/demonstration sites located within the buffer zones of the Govind National Park at an elevation of 2400 metres.

#### 7.2.2 Project Objectives

1. To organize awareness camps for conservation strategy and traditional system of medicine (TSM) promotion.
2. To develop and demonstrate cultivation model for selected medicinal plant species.
3. Agro-technological development and its extension through training program amongst the local people.
4. To explore the possibilities of tie-ups with pharmaceutical industries emphasizing the need of 5% invest of sale in community development and medicinal plant conservation program.
7.2.3 Field Observations related to Objectives

The following information was collected during project site/field visits and interactions with project personnel, local people and other stakeholders. Observations are grouped in order to describe progress made towards each project objective.

Objective 1

To organize awareness camps for conservation strategy and Traditional System of Medicine promotion (TSM).

In order to raise awareness among the local people, ten eco-camps (or the awareness camps) were organized by SHER during the first year of the project in five remote villages of the project area - Taluka, Sankri, Sidri, Toli Bhur and Kunja Grant. Teams conducting each of the eco-camps included botanists, foresters, (mostly teachers from the Garhwal University), Forest Department personnel, Wildlife Department personnel, and local herbal healers. A total of 226 villagers participated in the eco-camps, of which 15 were women.

The eco-camp activities primarily addressed the following issues:
- Identification of important medicinal plants;
- Habitat requirements of various medicinal plants;
- Importance of conservation and sustainable harvesting of wild medicinal plants;
- Methods of sustainable (or scientific) harvesting for different types of medicinal plants;
- Impacts of destructive harvesting;
- Economic importance of wild medicinal plants;
- Importance of local herbal healing system and the herbal health tradition;
- Importance of and need for ex situ conservation, its development and management;
- Potentials of medicinal plant cultivation as a cash crop to improve local livelihoods and generate income;
- The cultivation of multipurpose trees was also encouraged during the eco-camps as a means of saving time spent harvesting fuel-wood that could be used in other income generation activities.

The eco-camp activities included the following resource materials:
- Herbarium specimens of important medicinal plants
- photographs of important medicinal plants
- medicinal herb samples (i.e. useful parts of medicinal plants)
- slides, posters, booklets, and brochures, etc.

The eco-camps were also used as an opportunity to document ethnobotanical information of several locally-used medicinal plants, including the local perceptions of scarcity, and the curative properties of several varieties. In addition, the camps proved a productive opportunity to establish close working relationships with the villagers, and the staff of the local Forest and Wildlife Departments.

Local Partnerships:

SHER is working in close coordination with the Himalayan Trekkers Sankri Samiti, an NGO that is functioning since last 10 years, and engaged in the field of biodiversity conservation through awareness creation to the tourists, trekkers, expedition team members, guides, porters, herdsmen and ordinary villagers. The participation of porters, guides and herdsmen were crucial as they
frequently travel to the high altitude localities with their guests and herds, used the biological resources on the way, and also collect commercially valuable medicinal plants on their way back. The Village Pradhan (Village Chief), Village Development Committee personnel, and members of Mahila Mangal Dal (Association for Women Welfare) also supported and assisted with the implementation of the eco-camps.

Objective 2

To develop and demonstrate cultivation model for selected medicinal plant species.

The project has supported the establishment of three demonstration sites at various elevations, all within the Govind National Park. At a lower elevation, Vikash Nagar, and at the middle zone, Dhatmir, the land has been leased from local farmers. Project activities at these two lower sites have since ended, and the project has concentrated its focus on the third site, Sirolatok, which is at the highest elevation of 2400 metres. The land had been previously leased from the local Temple committee, and recently purchased with funds donated from the DST.

The Shirolatok nursery and demonstration site is located some two hours walk from Sangri, the nearest (and the ultimate) market and the road head. SHER has matched MAPPA’s funding through the in-kind purchasing of fencing, irrigation and water storage material for the site and has constructed a polythene house covering 100 sq.m of land. The construction of a water reservoir and supply pipelines has been completed in order to ensure a water supply during dry seasons.

Nursery and demonstration plantation areas consist of 380 beds of approximately 3 sq.m (3M x 1M). Beds are raised in order to provide drainage facilities to avoid water logging and soil erosion. The main focus has been placed on the large-scale cultivation of three species of valuable medicinal plants – Aconitum atrox, Aconitum heterophyllum and Saussurea costus. However, trials for propagation and large-scale cultivation with other economically important species are also on going. Species such as A. atrox and A. heterophyllum, Fritillaria cirrhosa (Kakoli), Polygonatum verticillatum (Mitha dudia) and Podophyllum hexandrum (Ban Kakadi) all have high commercial demand but shortage of planting materials in the wild.

The original supply of starter seed had been collected by the project staff from adjoining localities and other distant high-altitude localities of Chamoli, the adjoining district, using sustainable harvesting methods. The project makes regular visits to remote alpine areas for the ongoing collection of medicinal plant germplasm from different localities. These are domesticated through trials and maintained as ‘mother plants’ for the on-going production of quality seeds of each species.

Aconitum atrox, Aconitum heterophyllum, Saussurea costus, Podophyllum hexandrum, Dactylorhiza hatagirea, Paris polyphylla have been successfully propagated through root/tuber cuttings. These and many other important species (except for Dactylorhiza hatagirea) have been successfully germinated from seed. Seed from Aconitum heterophyllum germinated after 20 days and the seedlings were ready for transplantation after 100 days.

Table 5 outlines the Medicinal Plants present in the nursery/demonstration site at Shirolatok.
Table 5: Medicinal Plants in the SHER Nursery at Shirolatok

<table>
<thead>
<tr>
<th>Hindi/trade name</th>
<th>Botanical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitha Bish</td>
<td>Aconitum atrox</td>
</tr>
<tr>
<td>Atis</td>
<td>Aconitum heretophyllum</td>
</tr>
<tr>
<td>Kuth</td>
<td>Saussurea costus</td>
</tr>
<tr>
<td>Ban Kakadi</td>
<td>Podophyllum hexandrum</td>
</tr>
<tr>
<td>Kutki</td>
<td>Picrorhiza scrophulariiflora</td>
</tr>
<tr>
<td>Dhup/Dhup Lakkad</td>
<td>Jurinea dolomiaea</td>
</tr>
<tr>
<td>Satuwa</td>
<td>Paris polyphylla</td>
</tr>
<tr>
<td>Archa</td>
<td>Rheum australe</td>
</tr>
<tr>
<td>Jatamasi</td>
<td>Nardostachys grandiflora</td>
</tr>
<tr>
<td>Mushkmbala</td>
<td>Valeriana jatamansii</td>
</tr>
<tr>
<td>Mitha dudia</td>
<td>Polygonatum verticillatum</td>
</tr>
<tr>
<td>Chora</td>
<td>Angelica glauca</td>
</tr>
<tr>
<td>Pushkar</td>
<td>Inula racemosa</td>
</tr>
<tr>
<td>Chakad</td>
<td>Typhonium diversifolium</td>
</tr>
<tr>
<td>Dhandi buggi</td>
<td>Tanacetum longifolium</td>
</tr>
<tr>
<td>Kakoli</td>
<td>Fritillaria cirrhosa</td>
</tr>
</tbody>
</table>

At present, the quantity of Aconitum atrox, Aconitum heterophyllum and Saussurea costus in the demonstration plots are approximately 15000, 12000 and 21000 mature plants, respectively. The cultivation of these species is currently in its third year. Given that the objective is to produce sufficient quantities of planting materials to provide to interested farmers, all material produced at the demonstration site is for propagation purposes only. Given the high-demand and scarcity of many of the species cultivated by SHER, several large-scale production agencies from other regions (notably herbal drug companies) have requested a large supply of planting material. Despite the interest, SHER’s first priority is to producing sufficient quantities for the local farming community. Table 6 lists the medicinal plant species which have been cultivated at a relatively large-scale in order to meet demand for planting material.

Table 6: Cultivation area for High Priority Species at the SHER Nursery in Shirolatok

<table>
<thead>
<tr>
<th>Plant species</th>
<th>Demonstration/cultivation area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aconitum atrox</td>
<td>1.5 acre (6000 sq.m) = 0.6 ha.</td>
</tr>
<tr>
<td>Aconitum heterophyllum</td>
<td>1 acre (4000 sq.m) = 0.4 ha.</td>
</tr>
<tr>
<td>Saussurea costus</td>
<td>1.5 acre (6000 sq.m) = 0.6 ha.</td>
</tr>
</tbody>
</table>

SHER has also conducted cost benefit analysis for the production of several high-demand species as compared to the traditional food crop. Traditionally, potato has been the main crop for both domestic consumption as well as sale in the local market.

Results revealed that the total production of potato per hectare of land is equivalent to Rs. 50,000, yielding a net profit per hectare of land equivalent to Rs. 10,000. In comparison, the net profit anticipated from the cultivation of Aconitum atrox is Rs. 80,000/acre/year (i.e. Rs. 2,00,000/ha./yr.), and from Aconitum heterophyllum is approximately Rs. 1,20,000/acre/year (i.e. Rs. 3,00,000/ha./yr.). Local farmers report that they will continue to plant a small amount of potato for domestic use, but will substitute the potato planted for market sale with a more...
lucrative crop, either *Aconitum heterophyllum* or *Aconitum atrox*. In this way, the risk of displacing subsistence food crops with cash crops is minimized.

**Objective 3**

*Agro-technological development and its extension through training program amongst the local people.*

The project is conducting on-going research and development activities include: Project staff revisit remote areas for the continual harvesting of wild germplasm, which are then tested using various agro-technological packages for their domestication. The intention is to expand the number of medicinal plants available for cultivation. Research into suitable agro-technological packages include trials focusing on the effect of:

- soil textures on seed germination
- depth of seed sowing on germination
- germination and growth hormones on seed germination
- hormones on stem cuttings (vegetative propagation)
- hormones on tuber cuttings (vegetative propagation)

Experiments with seed germination and vegetative propagation have also been carried out, together with the use of growth hormones, whenever needed, to increase the extent of germination and production of enough planting materials. Mother plants of most tuber-yielding medicinal plants are preserved for seed production, while the rootstock and tubers produced are harvested and cut into appropriate pieces for vegetative propagation. In natural conditions, *Aconitum atrox* and *Aconitum heterophyllum* produce only 2 tubers after one year. By comparison, the SHER cultivation trials have increased the number of tubers increased to 6-7 per plant as well as increasing the concentration of bio-chemically active components.

Once the most productive agro-technological packages had been established, local farmers were trained on various aspects of medicinal plant propagation and cultivation in the Nursery and demonstration site at Shirolatok. These trained farmers were encouraged to work in the demonstration farm on daily-wages basis to refine their knowledge and to provide more practical experience in medicinal plant cultivation and management. Interested farmers were supplied with seedlings at a nominal price and post-cultivation technical assistance was provided by project staff. Seeds, seedlings and tubers for propagation are provided to farmers at substantially lower prices compared to the rate of government seed supply companies, for those seeds that are available for purchase. Farmers who do not have the means to purchase seed or seedlings have the option to exchange seeds for labour at the demonstration site. The following table lists the purchase price for seedlings available from the SHER nursery.

**Table 7: Purchase price for seedlings available from the SHER Nursery in Shirolatok**

<table>
<thead>
<tr>
<th>Medicinal plant seedling</th>
<th>Price (Rupees)/plant</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aconitum atrox</em></td>
<td>0.25</td>
</tr>
<tr>
<td><em>Aconitum heterophyllum</em></td>
<td>0.30</td>
</tr>
<tr>
<td><em>Saussurea costus</em></td>
<td>0.35</td>
</tr>
<tr>
<td><em>Dactylorhiza hatagirea</em></td>
<td>0.40</td>
</tr>
<tr>
<td><em>Paris polyphylla</em></td>
<td>0.15</td>
</tr>
<tr>
<td><em>Podophyllum hexandrum</em></td>
<td>0.20</td>
</tr>
<tr>
<td><em>Polygonatum verticillatum</em></td>
<td>0.25</td>
</tr>
<tr>
<td><em>Rheum australe</em></td>
<td>0.30</td>
</tr>
</tbody>
</table>

MAPPA Midterm Evaluation, 2002
At the time of the evaluation visit, 12 farmers had initiated cultivation of MAPs from SHER on their private land, with approximately 150 farmers interested in participating in the future. In April 2001, SHER initiated a network among the medicinal plant cultivators. The number of members in the network is likely to increase in future as a large number of farmers have expressed an interest in medicinal plant cultivation.

**Objective 4**

*To explore the possibilities of tie-ups with pharmaceutical industries emphasizing the need of 5 % invest of sale in community development and medicinal plant conservation programme.*

Several reputed pharmaceutical companies (notably Dabur, Zandu and Baidyanath) have approached SHER for recommendations and guidelines regarding propagation, multiplication and farming of important high-altitude medicinal herbs. In addition to the results of SHER research on propagation, several companies have requested a supply of seed for several high-demand species. Given the scarcity of the species such as *Aconitum atrox*, *Aconitum heterophyllum* and *Saussurea costus*, in both the wild and under cultivation, these companies have assured the full-purchase price of several herbs and in some cases an additional 10% on the market price.

Given that SHER is working within a protected area, there are several restrictions placed on the export of endangered species from the Park that restrict the incentive to cultivate MAPs for income generation. The park regulations prevent the cultivation and sale of any commercial crops outside of the park’s boundaries. As such, SHER staff have negotiated an arrangement on behalf of local farmers with the State government. Farmers receiving training and subsidized plant material through the MAPPA project, would be certified as growers operating under agreed-upon standards of production, and would be permitted to sell their produce.

SHER staff also negotiated a formal biopartnership between certified farmers and an Ayurvedic pharmaceutical company based in Dehra Dun. The arrangement ensured that farmers with a guaranteed market and a fixed fair price for their harvest, in exchange for exclusive rights as the sole buyer. In addition, the company guarantees to pay 25% of production costs up front to farmers, and 5% of profits are returned to the community as an investment to continue research and development in the sustainable production of MAPs. In that the MAP crops recommended by the project require a 2-3 year establishment period before harvest can occur, the sale of a crop has yet to occur. Once the agreement is fulfilled, it would provide an opportune case study to examine the socio-economic impacts of the biopartnership on livelihoods for participating farmers. The project has maintained consistent records documenting the demographic profile of farmers participating in the program and their rates of production. This will provide an ideal data set for analysis of the socio-economic impacts on livelihoods in the community.

SHER staff (Mr. Sushil Chauhan) have also closely monitored the medicinal herb market situation and trends and have developed a number of institutional contacts. According to recent studies, the price of medicinal herbs in general has increased due to increasing demand as well as decreasing supply. This is chiefly due to the majority of high-altitude medicinal herbs brought to the market are from diminishing wild sources. The production of a constant supply of quality, high demand raw material has high market potential. Given that the project is relatively new and the establishment period for the majority of plants is a minimum of three years, most of the medicinal plant products have not yet been marketed, although several farmers will be harvesting marketable stock this year.
7.2.4 Challenges and Constraints

As is the nature of a small grant, MAPPA has restricted the types of project components available for funding. This includes the provision of vehicles, the construction of infrastructure (such as wells and buildings) and the purchasing of land. These items are inevitably listed as constraints in discussions with project staff, especially for projects working in very remote areas, such as SHER. Although this is made sufficiently clear to small grant recipients, it is nonetheless a challenge for emerging research institutes.

SHER is constrained by a limited number of field-based staff. Although the MAPPA project had a provision for two field staff, (one field assistant and one gardener), these positions have ended given the completion of MAPPA funding. A recommendation for the continued staffing would be the incorporation of funds for institutional support and continued research through the biopartnership with local industries. As estimated by the field assistant, research assistant, gardener and other daily-wage staff, the nursery and demonstration site at Shirolatok needs a minimum of 10 permanent field staff (field workers) to maintain the demonstration site, research beds and nursery.

The relatively low status of women in the region posed several challenges to the team in their attempt to work directly with female members of the community. The majority of communities in the project area practice polygamy, and women are not typically recognized as landholding. Encouraging the participation of women in training programs and awareness campaigns proved extremely difficult, and the project resulted in women being underrepresented in the project design and implementation. The staff is acutely aware of this shortcoming, and has attempted to address the issue by forming a partnership with a local women’s organization, the Association for Women Welfare, which assisted in the planning and implementation of eco-camps.

7.2.5 Recommendations and Opportunities

1. Given the early focus of the project on raising awareness of the importance of medicinal plant conservation, the project has a unique opportunity to research the impact of awareness raising on decision making and conservation behaviours in the participating communities.

2. During the course of the eco-camps, the project raised awareness of sustainable harvesting methods and limits for high-demand, endangered species. It is recommended that the project document methods used to determine the sustainable harvest methods and limits, or provide detailed sources for such information.

3. It is recommended that the project provide more detailed reporting on whether the cost benefit analysis factored in the costs of seed production using the models of propagation developed at the demonstration site. For instance, several methods of seed and root propagation required inputs such as growth hormones or fertilizers that may not be replicable on farm in remote high-altitude villages. This may introduce a risk of creating a system of dependency on SHER for the provision of seed. SHER should document in further detail the extent to which farmers will be self-reliant in seed production, or alternatively, through root cuttings or other vegetative propagation. More detail in the cost-benefit analysis reporting would clarify this issue, or if needed, identify priorities for the development and transfer of more appropriate technologies in the future.
4. The SHER project has conducted a cursory analysis of the socio-political environment in the project site, but would benefit from a more detailed social and gender analysis, particularly related to the relationship between gender dynamics, land tenure and resource management. Detailed gender analysis would inform the design of strategies and technologies in biodiversity management that are customized to gender-differentiated needs, interests, and priorities. In this way, SHER staff would benefit from collaboration or consultation with a gender resource person in order to increase the knowledge and skills of staff on gender issues.

7.2.6 Conclusions

The project can be considered one of MAPPA’s success stories, as it has successfully developed agro-technological packages for the domestication and cultivation of endangered high-altitude medicinal plants that have not been previously cultivated. There is substantial potential for replicating the systematic and scientific approaches towards documenting appropriate technological methods for domesticating and increasing production. Given the relatively closed nature of the project area, there is a unique opportunity to assess the conservation impact that domestication and cultivation has had on reducing over-harvesting and illegal trade of endangered plants out of the park. Additionally, the project has started with a realistic number of participants (12 farmers cultivating MAPs on private land) in a small number of communities (2-3 villages), allowing for a sufficient control group to conduct a detailed assessment of the socio-economic impacts of MAP cultivation in those communities. This would include an assessment of the economic/livelihood risk associated with replacing subsistence food crops with marketable cash crops such as MAPs, and the risk of displacing marginalized and landless groups that have traditionally harvested and sold MAPs from the wild. Additionally, the project has demonstrated excellent foresight in planning for the eventual marketing of cultivated MAPs, in that it has negotiated on behalf of farmers with the state government to allow for the recognition of SHER-affiliated farmers as certified growers of specific MAPs. The trial ‘biopartnership’ being negotiated by SHER, which ensures a favorable price for farmers, a guaranteed market, the sharing of production risks between producers and buyers, and the guarantee of a return investment in local community development, will provide valuable lessons to other MAPPA partners attempting biopartnerships. Further research and documentation into the process of establishing a formal biopartnership, its strengths and weaknesses would be beneficial.

The project is therefore well positioned for a next phase, and could provide valuable insight into the contribution of domestication and cultivation programs towards conservation of MAP biodiversity and the provision of biodiversity-based livelihoods.
7.3 Case Study #3: Socio-Economic Agroforestry and Environment Concern (SAFE Concern)

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Action Research on Medicinal Plants and other Non-timber Forest Products in Central Midhills Region, Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator</td>
<td>Dr. Damodar Prasad Parajuli</td>
</tr>
<tr>
<td>Research Associates</td>
<td>Mohan Raj Adhikari (Forester and Research Officer, SAFE Concern), Dr. Virgu Duwadi, (Chief Technical advisor, SAFE Concern)</td>
</tr>
<tr>
<td>Small Grant Amount</td>
<td>$28,196.00</td>
</tr>
<tr>
<td>Location</td>
<td>Kabhrepalanchok District, Midhills region of Nepal</td>
</tr>
<tr>
<td>Duration of the project</td>
<td>December 1999 – October 2002 (Three years)</td>
</tr>
</tbody>
</table>

7.3.1 Summary

SAFE Concern received a small grant of $28,196.00 in December of 1999 for a three year project focusing primarily on the establishment of a nursery and demonstration garden to be used to train members of local Community Forest user Groups (CFUG) in the sustainable cultivation and harvest of medicinal plants. Funding for the project is scheduled to end in October 2002.

Throughout the last two years, the project area had been experiencing outbursts of violence resulting from a political insurgency occurring throughout the country. The MAPPA project area, approximately 50 kilometres from Kathmandu, had been particularly affected by the violence the week before the scheduled evaluation visit. Therefore, for safety reasons, it was decided that the evaluation team should avoid a visit to the field sites and that evaluation-related interviews would be conducted in Kathmandu where there was a stronger perception of safety. Project staff elected to invite project participants and local staff to Kathmandu for participation in evaluation focus groups and interviews.

On January 21, 2002 the co-evaluator visited the District Forest Office, Dhulikhel, (Kabhrepalanchok District) in order to interview two local project staff of SAFE Concern, six members of the local Nala Tukuche VDC, two district Forest Officers for Kabhrepalanchok District, and a Nursery Specialist at Dabur Nepal Pvt. Ltd. The Dabur Nepal Pvt. Ltd. is supplying the project with seeds, seedlings and technical assistance. In addition, 10 participants/beneficiaries from Dhunkharka VDC, Kabhrepalanchok district were interviewed by the evaluation team at SAFE Concern's office on January 23, 2002.

In addition, Dr. Bhattarai, as a MAPPA Consultant, had visited the Project site at Dhunkharka, Kabhrepalanchok district during the first week of August 2001. The field-visit team included Dr. Madhav Karki, MAPPA Coordinator, Mr. D. P. Parajuli, Project Leader, Mr. Mohan Raj Adhikari, Forester and Research Officer, Mr. Nava Raj Kaphle, District Forest Officer, Kabhrepalanchok district. During this field visit, the monitoring team visited the project's nursery and some plantation sites. Interviews and interaction programs were held in the Village Development Committee office with project personnel, two District Forest Officers, the

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31 Dabur-Nepal, a well-established medicinal plant based cultivation facility, is currently working in the field of medicinal plant seedling production and is well-equipped with greenhouses to produce millions of seedlings of desired medicinal plants.
Chairperson of the Village Development Committee and several members, CFUG members, several traditional healers. The report that was produced as a result of this earlier visit was included as a source of information for the current evaluation report.

### 7.3.2 Project Objectives

The overall objective of the project is to uplift the rural economy through sustainable management of medicinal plants and other NTFPs in the Midhills region of Nepal.

The specific objectives of the project are as follows:

1. To create awareness among local people regarding importance of medicinal plants and other NTFPs through education and training programs on conservation approaches, forest management and biodiversity enhancement;

2. To find out simple technology in increasing the production of medicinal plants to meet the increasing demand of raw materials by local users and the industry;

3. To plant suitable medicinal plants in forests managed by local community, leasehold forests and private lands to supplement the capacity of the wild resources;

4. To develop the local partners/NGOs to support private farmers and Forest user Groups (FUG) in Medicinal Plants Cultivation and Management; and

5. To generate supplementary income to uplift the socio-economic conditions of the rural people by producing valuable resources and developing appropriate and scientific harvesting regime of medicinal plants and other NTFPs in the midhills region of Nepal.

### 7.3.3 Field Observations related to Objectives:

**Objective 1**

To create awareness among local people regarding importance of medicinal plants and other NTFPs through education and training programs on conservation approaches, forest management and biodiversity enhancement.

Two Village Development Committees (VDCs), Dhunkharka and Nala, located in Kabhrepalanchok district, were considered as project sites. Dhunkharka lies at an altitude of about 1800 m while Nala Tukuche lies at about 1400 m. During the project proposal development phase, surveys were conducted with randomly selected households in both communities, in order to document basic information on NTFPs, including their local importance, use, traditional management practice, and availability.

In order to raise awareness of the importance of medicinal plants, the project has planned to complete six training programs, one in each project area per year. To date, the project has implemented four sets of training, two in each project site, involving 110 participants in total. In
addition, two study tours with 51 participants have been organized in order to raise awareness of local people and farmers of the potential for cultivation, processing and value addition of locally available NTFPs and MAPs. Two additional training programs, and one further study tour, are planned for the remaining project period.

In the training program at Nala Tukuche, 30 villagers participated, representing 4 different CFUGs. In Dhunkharka, 30 local farmers participated, representing 5 CFUGs. Of these, four participants were local schoolteachers. Only four of the participants were women.

The training program included classroom, nursery and field tour components, and provided basic information on NTFPs in general, and MAPs in particular focusing on the importance of biodiversity conservation, and of medicinal plants as a potential economic resource. The curriculum for the training programs included the following subjects:

- General information and importance of medicinal plants, other NTFPs and biodiversity conservation;
- Potential role of medicinal plants in the local economy;
- Identification of important medicinal plants available in the project areas and beyond;
- Methods of propagation, cultivation, development and management of selected economically as well as socially viable medicinal plants;
- Preparation of nursery beds and nursery techniques for different types of medicinal plants;
- Cultivation of selected medicinal plants in the CF and private land;
- Sustainable harvesting techniques for selected medicinal plant species, post-harvest techniques, local level value addition and the possible processing techniques;
- Medicinal plant market and marketing procedures including marketing chains, role of middlemen and other stakeholders, etc.

During the training, participants visited several different types of forest conservation sites, as well as medicinal plant cultivation and processing facilities. These included some medicinal plant cultivation units managed by the government and/or other institutions such as:

- Daman Herbal Farm, Daman, Makawanpur District;
- Brindaban Herbal Farm, Hetauda, Makawanpur District;
- Tamagadi Herbal Farm, Tamagadi, Bara District;
- Sagarnath Forest Development Project, Sagarnath, Sarlahi district;
- Singha Durbar Vaidya Khana, Kathmandu (the largest and government managed Ayurvedic medicine manufacturing factory);
- Herbs Production and Processing Company Limited (HPPCL), Kathmandu;
- Dabur Nepal Private Limited, Banepa, Kabhrepalanchok district, etc.

The training package included several booklets and brochures on common medicinal plants, translated into Nepali.

Interactions with the Community Forest User Group (CFUG) members and project beneficiaries representing both Nala Tukuche and Dhunkharka project sites revealed that project participants found the training program to be very informative and useful. The major proportion of the training was centered at developing practical skills such as propagation techniques and sustainable harvesting methods, as well as basic skills in primary processing including cleaning, and drying and storage techniques.

According to the participants in the field-tour aspect of the training program, the observation tour was very useful in that it provided them exposure to large scale farming of medicinal plants, mass scale production of seeds and seedlings of medicinal plants, large scale processing of medicinal plants.
plants, and methods for the production of medicines from some common as well as many unknown medicinal plants.

**Objective 2**

*To find out simple technology in increasing the production of medicinal plants to meet the increasing demand of raw materials by local users and the industry.*

The project has supported the establishment of a NTFP nursery each project site during the first year of project activities. The nurseries are intended for the production of sufficient planting materials for enrichment plantation in local forests as well as distribution among interested villagers/farmers. Seeds and cuttings for propagation in the nurseries are typically supplied in bulk from the Dabur Nursery. Although planting material and seeds are available in the area from Dabur Nursery, the cost of seeds and recommended agro-technological recommendations are beyond the reach of the majority of small and marginal scale farmers. As such, the project is hoping to provide affordable planting material and appropriate technologies for the cultivation of high-demand MAPs.

The selection of medicinal plant species recommended for both cultivation on private farms and reintroduction and regeneration in forested areas, is based on the following criteria:

- The possibility of development and management in the project area
- The degree of scarcity in the natural habitat (diminishing resources in the Community Forests)
- A low availability/volume and high value/demand;
- An assured market demand and value and local purchasers;
- The potential of local level value-addition and processing, etc.

The seedlings from the nursery have been transferred to community forest land as well as farmers' personal land. Table 9 outlines a sample of the MAPs cultivated in the project nurseries.

**Table 8: SAFE Concern Project, Nursery Species**

<table>
<thead>
<tr>
<th>Hindi/Trade Name</th>
<th>Botanical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amala</td>
<td>Phyllanthus emblica (Indian gooseberry)</td>
</tr>
<tr>
<td>Bojho</td>
<td>Acorus calamus</td>
</tr>
<tr>
<td>Bhayakur</td>
<td>Dioscorea deltoidea (Yam)</td>
</tr>
<tr>
<td>Chiraito</td>
<td>Swertia chirayita</td>
</tr>
<tr>
<td>Churi</td>
<td>Bassia butyracea</td>
</tr>
<tr>
<td>Dalchini</td>
<td>Cinnamomum tamala (Indian Cassia lignea)</td>
</tr>
<tr>
<td>Kurilo</td>
<td>Asparagus racemosus</td>
</tr>
<tr>
<td>Lapsi</td>
<td>Choerospondias axillaris</td>
</tr>
<tr>
<td>Lemongrass</td>
<td>Cymbopogon citratus</td>
</tr>
<tr>
<td>Launth salla</td>
<td>Taxus wallichiana</td>
</tr>
<tr>
<td>Sugandhakokila</td>
<td>Cinnamomum glaucescens</td>
</tr>
<tr>
<td>Sugandhawal</td>
<td>Valeriana jatamansii</td>
</tr>
<tr>
<td>Timur</td>
<td>Zanthoxylum armatum</td>
</tr>
</tbody>
</table>

The project has supported detailed studies on various propagation methods for high demand species, from both stem cuttings and seedlings. Researchers have documented production levels
by calculating biomass produced under various cultivation methods in farmers fields and in
forested areas. The predominant focus has been on the following species:

- **Taxus wallichiana**: 14,500 seedlings have been obtained from the Dabur Nepal nursery -
  the project has demonstrated an 80% survival rate in rooting from stem cuttings;

- **Swertia chirayita**: 25,000 seedlings were obtained from the Dabur Nepal nursery, of these a
  large portion were distributed directly to farmers, while a smaller sample were retained and
  cultivated in the nurseries for the production of seeds and have demonstrated strong
  germination rates;

- **Bergenia ciliata**: produced in good quantity from rhizome cuttings in both nurseries.

- **Cinnamomum tamal** seed/seedlings has also been introduced from other different parts of
  the country and have substantial market potential both locally and in markets in India. The
  Nala nursery has met with substantial success in propagating *Cinnamomum tamala*. In the
  Dhunkarka case, the propagation results in the nursery were not satisfactory, although the
  seedlings transferred at the community forests as well as the farmers' land have showed
  desired acclimatization. The cultivation of *Cinnamomum tamala* has been extended to
  different parts of Bhaktapur, the adjoining district. The demand for this species, as well as
  others such as *Swertia chirayita* and *Valeriana jatamansi* is increasing.

In addition, the project has established and tested sustainable harvesting methodologies for *Taxus
baccata*, *Timur*, and *Chiraito*. The project also aims at disseminating the research findings to the
adjoined and neighbouring area Community Forests and farmers.

### Objective 3

**To plant suitable medicinal plants in forests managed by local community, leasehold forests and
private lands to supplement the capacity of the wild resources.**

The nurseries are intended to provide planting material for private farmers interested in
cultivating MAPs, as well as seedlings for regeneration planting and agro-forestry cropping in
local forested areas managed by the local Community Forest User Groups. The species planted in
the local CF are intended to be harvested later by the CFUG and used to generate income for local
community development. Detailed ecological studies have been conducted in the local forests to
determine appropriate habitats for each species. The project has established several forest test
plots to monitor the technological requirements of each species and to determine optimum
cropping patterns (such as rows, clusters and/or patches) for each species.

### Objective 4

**To develop the local partners/NGOs to support private farmers and Forest user Groups (FUG) in
Medicinal Plants Cultivation and Management.**

In addition to raising awareness of the importance and economic potential of medicinal plants in
the local communities, the project has worked to increase the capacity of the local Forest User
Groups in each VDC to manage the resources sustainably and equitably. In the course of project
implementation, SAFE Concern has created partnerships between local, small-scale producers
and local suppliers/purchasers such as Dabur-Nepal. The project is working in close collaboration
with Dabur Nepal, which has constantly provided seeds, seedlings and technical assistance to the
project. For instance, the company had provided the project with 25,000 seedlings of *Swertia
chirayita*, and had obtained *Taxus* stems (for propagation from stem cuttings) from the
Dhunkharka CFs. In return, Dabur-Nepal has provided 14,500 established seedlings of *Taxus*
wallichiana to the project. These seedlings have mainly used for enrichment plantations in the
CFs. Some farmers have also planted Taxus in their private land. The company also provides a
local market for wild harvested and cultivated MAPs. The project has also co-ordinated a
commitment from HPPCL to purchase the medicinal and aromatic plants in raw and semi
processed forms that are produced locally.

In addition, the project has supported the integrating of NTFP-related sustainable use activities
with the regular program of the District Development Committee of Kabhrepalanchok District.
Also, the District Forest Office nursery has provided some seedlings, particularly those of fruit
and fodder trees like Choerospondias axillaris and Ficus spp.

As a direct result of the project, the local VDC in Dhunkharka have prepared a proposal for
external funding from the Kabhrepalanchok district Development Committee to support aspects
of MAP and NTFP sustainable management that are not otherwise funded under the MAPPA
project with SAFE Concern. The Dhunkharka VDC has received financial support of Rupees
1,50,000 in order to develop irrigation facilities in the project area, provide fencing for the
nursery and some cultivation sites, and construct a water reservoir with a capacity to store 24,000
liters.

Interviews conducted with local agencies, such as the previous and present DFOs, the Assistant
Forest Officer, and Nursery Specialist at Dabur Nepal, indicated a general consensus that the
project activities have been very influential and beneficial to the local farmers and CFUG
members. It has received cooperation and support from the local people, local CBOs, private
organizations, District Development Committee, District Forest Office, etc.

**Objective 5**

*To generate supplementary income to uplift the socio-economic condition of the rural people by
producing valuable resources and developing appropriate and scientific harvesting regime of
medicinal plants and other NTFPs in the midhills region of Nepal.*

The project has provided an opportunity for small-scale farmers to link directly with
buyers/processors in the local area. Both Dabur-Nepal and the HPPCL have stated their interest in
purchasing bulk quantities of all locally produced MAPs from small-scale producers, although
purchasing agreements remain informal. Several local farmers that have participated in SAFE
Concern sponsored training have begun the private cultivation of valuable medicinal plants such
as Tejpat (*Cinnamomum tamala*), Bojho (*Acorus calamus*), Lapsi (*Choerospondias axillaris*),
Amala (*Phyllanthus emblica*), Sugandhawal (*Valeriana jatamansi*), and Chitaito (*Swertia
chirayita*). Among them *Swertia chirayita*, a short-duration crop, has started providing some
income to the local villagers.

Very recently, several villagers at Dhunkharka have begun preparing packages of 'Herbal tea', for
local consumption and informal sale in the local markets at Bhaktapur and Kathmandu. The
principal ingredients of the 'Tea' are lemongrass, mentha and cinnamon leaves. There is
substantial potential for the project to provide more specific information and training on the
preparation and marketing of such value-added initiatives.

As the project activity has completed only two years of it’s three-year implementation period, the
progress towards increasing awareness, production of seeds propagation materials, their
plantation in the Community Forests and private land is progressing satisfactorily. Although, no
noteworthy supplementary income generation activities have been observed except for a few farmers who have harvested some quantities of *Swertia chirayita* to sell in the local markets at Bhaktapur and Kathmandu. It is highly expected that these farmers as well as the CFUG members will be well positioned to earn proportional returns for their efforts, in line with their expectations.

7.3.4 Observations and Recommendations

1. Given that the project is still active, it is recommended for the remaining time that the researchers continue on the current course of documenting appropriate agro-technological packages for the cultivation of high demand MAPs, and continue rigorous testing of these methods in the field.

2. There is potential for the project to increase marketing options by supporting the establishment of a grower/collector cooperative for a wide variety of NTFP species. Such a cooperative would aid in setting standards for sustainable cultivation/harvesting, grading the harvest, negotiating fair market prices, and coordinating the sale of bulk material from member farmers to local buyers such as the HPPCL. SAFE Concern could play a pivotal role in providing training to the VDC or CFUG members on the management of cooperatives, and the setting of standards for cultivation/wild harvests.

3. Given that the demand for quality MAP planting material continues to exceed the available supply, it is not recommended that the project initiate processing activities or value-added enterprise development this year. When the supply is constant and sufficient to meet production needs, the project could begin to consider supporting improved processing methods and the establishment of small-scale processing enterprises. There may be room for this type of support in the second phase of the project. For instance, project participants observed an abundance of good quantity of wintergreen plants (*Gaultheria fragrantissima*) in their forests and community land. They are aware that it can be sustainably harvested and used in the extraction of essential oil. As the wintergreen oil has considerable demand locally as well as internationally, they are hoping for support for a small-scale distillation unit from the project for the wintergreen as well as other aromatic plant distillation.

4. Project staff is acutely aware that gender plays a critical role in the design of a program for sustainable use of MAPs, and ensures the program makes options and opportunities available to both women and men in participating communities. However, the research team has not sufficiently explored specific issues through gender analysis. It is recommended that project staff conduct a social and gender analysis in order to identify specific gender issues and opportunities, and integrate these considerations into future curriculum development for the project. Several of the female participants in the training program recommended that the project employ female trainers or resource persons, as they were more comfortable conversing with women who were experienced in the field.

5. Prior to the design of a second phase, the project would benefit from a comparative analysis of the two participating communities, in order to better design a responsive program of research that is catered to the unique characteristics and needs of each community. Points of comparison/contrast include socio-economic, cultural and demographic data; different ecological zones (Nala is at 1400m and Dhunkharka is at 2100m elevation); access to markets and transportation routes, as well as the structure of operation and priorities of each VDC and CFUGs.
7.4 Case Study #4: Herbal Folklore Research Centre (HFRC) and the People’s Clinic Trust (PCT)

<table>
<thead>
<tr>
<th><strong>Project title</strong></th>
<th>“Strengthening the Traditional Health Practices and Training in cultivation of Medicinal and Aromatic Plants to the women and Herbal Healers of Chittoor District, Andhra Pradesh”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principal Investigator</strong></td>
<td>Dr. S. Vedavathy</td>
</tr>
<tr>
<td><strong>Research Associates</strong></td>
<td>V. Murdula, (Coordinator); A. Suhakar and U.V.Bhaskar Rao (Taxonomists); Dr. Dhanalakshmi, (Ayurvedic Doctor/Project Advisor)</td>
</tr>
<tr>
<td><strong>Small Grant Amount</strong></td>
<td>$28,196 (CND)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Chittoor District, Andhra Pradesh, India.</td>
</tr>
<tr>
<td><strong>Duration of the project</strong></td>
<td>Two years (January 1, 2000 – December 31, 2001)</td>
</tr>
<tr>
<td><strong>First extended date</strong></td>
<td>March 8th 2002</td>
</tr>
</tbody>
</table>

7.4.1 Summary

IDRC’s first support to medicinal plant research in Andhra Pradesh began through the IMPN network in 1994 to the the S.V. Arts College in Thirupati, for a project entitled “Survey of Plants with Reported AntiFertility Properties based on the Herbal Folklore of Chittoor DT, AP”. Under the supervision of Dr. Vedavathy as the Project Leader, the project focused on documenting traditional knowledge of herbal healers, women and MAP collectors in approximately 300 tribal villages in Chittoor District of AP through extensive ethnobotanical surveys. The observations of field staff and the expressed needs of participating communities of this first project were used to inform the design of a second project in the region. The small grant for the second project was provided to a newly formed research organization entitled the Herbal Folklore Research Foundation, under the supervision of the same Principle Investigator, and in partnership with an existing NGO, the People’s Clinic Trust.

The ultimate objective of the second phase project was to “strengthen the traditional health systems in rural areas of Chittoor District by revitalizing indigenous knowledge and conserving biodiversity of medicinal and aromatic plants”. The scope of this second project was broadened substantially to include the creation of a demonstration site for training local community members in the identification of key MAPs, their sustainable harvest, and small-scale cultivation in kitchen gardens and local forested lands managed under the Joint Forest Management System. A nursery was also established in order to increase the availability of domesticated high-quality plant material for distribution to local communities.

The project’s key activities can be grouped under the categories of conservation and sustainable use; improving access to primary health options; and improved livelihood options. The following six activities are central to the project:

- Documenting, validating and disseminating local knowledge of medicinal plants and herbal remedies;
- Conserving medicinal plants by encouraging their cultivation in nurseries, and community and kitchen gardens, local forested lands;
• Raising awareness of common ailments and locally accessible methods of treatment;
• Increasing access to culturally appropriate health care by developing and distributing sample ‘herbal health kits’ and training local women and healers in the preparation of herbal remedies;
• providing training to local community members on the identification, sustainable harvest, domestication and cultivation of medicinal plants;
• Supporting sustainable livelihoods through programming to increase local economic benefits from the harvest and production of medicinal plants and other non-timber forest products.

In December 2000, the project was visited by the Lead Evaluator in order to document and share the project’s key lessons in encouraging the sustainable use of medicinal plants within the participating communities. The report includes a comprehensive profile of the project in terms of ‘who, what, where, when and why’, and was intended to improve the dissemination of project results and experience and recommend future directions for the project. This case study is largely excerpted from the original evaluation report, with updates and edits made based on a review of recent project reports and the Project Leader survey implemented during MAPPA’s mid-term evaluation.

7.4.2 Project Objectives

General Objective
To strengthen the traditional health systems in rural areas of Chittoor District by revitalizing indigenous knowledge and conserving biodiversity of medicinal and aromatic plants

Specific Objectives
1. to continue documenting herbal therapies practiced by vaidyas, women, and older people of Chittoor District and establish an inventory of traditional practice;
2. to assess the safety and efficacy of the selected herbal treatments already identified in the inventory;
3. to establish a demonstration garden and nursery that will be used for training and awareness raising and that will supply material to local farmers and women for cultivation in kitchen and community gardens;
4. to enhance local biodiversity by introducing important medicinal plants from other areas of South India into community and kitchen gardens of Chittoor District as well as the HFRC demonstration garden/nursery;
5. to select key plant species with low processing technology requirements and that are beneficial in the treatment of common ailments, prepare and distribute samples in ‘herbal health kits’ along with training materials and instructional information;
6. to continue with the training of vaidyas and marginalize people, particularly women from dalit and tribal villages, in the identification and sustainable harvest of selected medicinal plants, in low-input cultivation of specific species, and in the preparation and application of herbal treatments;
7. to determine the potential economic benefits of cultivating key medicinal plants, to encourage small scale cultivation of selected plants, and to organize a buy back facility in order to enhance the community's capacity for sustainable income generation while ensuring local access to biological resources;

8. to identify and assess methods for facilitating local access to diverse genetic resources and ensure the equitable sharing of potential benefits that may arise out of product development and marketing initiatives.

7.4.3 Field Observations related to Objectives

The following information was collected during project site/field visits and interactions with project personnel, local people and other stakeholders. Observations are grouped in order to describe progress made towards each project objective.

Objective 1:
To continue documenting herbal therapies practiced by vaidyas, women, and older people of Chittoor District and establish an inventory of traditional practice.

During the first project, a broad ethnobotanical survey was conducted with a wide cross section of the district population in approximately 400 villages throughout Chittoor District. The surveys were carried out with a non-random, purposive sample of the rural population. Snowball and judgmental sampling methods were used to identify community members who are knowledgeable in medicinal plant identification and use. The primary respondents were local traditional healers, women and the elderly population, as they were identified as most likely to have direct knowledge related to traditional medicine. During the second project, surveys were carried out with an additional 200 participants from approximately 50 villages concentrated primarily in western Chittoor district. The survey documented approximately 400 medicinal plant species and over 1000 herbal therapies practiced by the rural people in Chittoor district. Information collected during the ethnobotanical surveys was published in two books, one entitled Tribal Medicine of Chittoor District, A.P and another published in Telegu (the state language of AP), entitled Grameena Vaidyamulo Oushadha Mokkalu. Throughout the process of conducting the ethnobotanical surveys, plant and seed samples were collected and are maintained in an HFRC Herbarium and seed bank.

Objective 2:
To assess the safety and efficacy of the selected herbal treatments already identified in the inventory.

One objective of the HFRC project was to conduct research on the efficacy & validity of the plants and/or plant preparations identified during the ethnobotanical surveys conducted in phase one of the project. The project enlisted the support of a partner agency, the Peoples’ Clinic Trust (PCT) to document 30 case studies of traditional treatment practices for ailments such as jaundice and snakebite. The case studies involved documenting the diagnosis, treatment and recovery rates of patients over an average of three weeks. Published 10 case studies in the journal ‘Heritage Healing’.
The HFRC research has contributed substantially to the literature by collecting detailed information on locally identified medicinal characteristics of indigenous plants and identifying new plant material for pharmacological and clinical research. Based on treatments documented during the early ethnobotanical surveys, the project has also supported efficacy trials of plant-based drugs or treatments using established protocols. The HFRC has commissioned two pharmacological institutes to conduct efficacy and validation trials. The first, at the IICT, in Hyderabad, pharmacological tests on five herbal preparations used as contraceptives have revealed positive results for three preparations. Validation tests were also commissioned through the Vel College of Pharmacy in Chennai, on a poly-herbal preparation for diabetes. The project has also worked to improve quality control and standardization of the preparation of herbal remedies and has prepared herbal health kits for distribution during awareness raising campaigns. The project is currently developing steps for the next phase, with a focus on continuing standardization of traditional medicinal practices for key treatments.

**Objective 3**

To establish a demonstration garden and nursery that will be used for training and awareness raising and that will supply material to local farmers and women for cultivation in kitchen and community gardens.

The HFRC has successfully established a medicinal plant demonstration garden, which houses a large number of plant samples collected during surveys of traditional healers and local women. Three indigenous people with experience in NTFP collection and cultivation are employed in the garden. The 1.5 acre garden is on rented private land in Mukkoti, Chandragiri and is accessible to the general public. Approximately 500 varieties of medicinal plants have been established at the garden, which serves as an educational resource for training workshops. The garden also serves as an experimental farm, for standardizing methods of cultivating and domesticating wild species.

The garden includes the following species: *Decalepis hamiltonii, Ichnocarpus frutescens*, *Holarrhena antidysenterica, Gymnema sylvestre, Costus speciosus, Plubago rosea, Oroxyllum indicum, Pueraria tuberosa, Dillinia indica, Syzygium alternifolium*.

In addition, samples of the live plants found in the demonstration garden have been included in a herbarium, which is comprised of approximately 450 varieties of medicinal plants used in and around Chittoor District. The garden also includes a nursery, which supplies plant samples to participants for planting in community gardens. The nursery includes 40 varieties of medicinal plants used in primary health care, with over 5000 saplings prepared for free distribution.

**Objective 4**

To enhance local biodiversity by introducing important medicinal plants from other areas of South India into community and kitchen gardens of Chittoor District as well as the HFRC demonstration garden/nursery.

The HFRC began distributing plants from their nursery during the first project. The objective was to encourage individuals in participating communities to cultivate medicinal plants in kitchen gardens and thereby ensure their access to affordable alternatives for treatment of common and minor ailments. This objective was particularly important in extremely isolated and marginalized communities, where no formal health care options existed. By increasing the presence of
indigenous but threatened plants in kitchen gardens, the HFRC also hoped to reduce the threat placed on wild species and improve the community’s access to useful plants. To date, the HFRC has encouraged the propagation of MAPs in kitchen gardens in 20-30 villages.

Plants were distributed to members of the community who had participated in awareness raising workshops and/or training sessions on the cultivation of medicinal plants and preparation of herbal remedies. In addition, in communities without partnering NGO’s, members of the community who demonstrated keen interest in the project were recruited to act as community liaisons to the project. They have agreed to disseminate project information to other participants, act as coordinators in terms of further training in the community, and if the community was too far from the demonstration garden, would often offer their gardens as demonstration plots.

In addition to the promotion of MAP cultivation in kitchen gardens, the HFRC partnered with local village organizations, Vana Samraksha Samithi (VSS), which liaise with the local Forest Departments for the co-management of forest areas under the state Joint Forest Management program. To date, medicinal plants of 50 varieties are included in 2 VSS forest plots in two villages (Sreenivasa puram & Sadasiva colony).

**Objective 5**

To select key plant species with low processing technology requirements and that are beneficial in the treatment of common ailments, prepare and distribute samples in ‘herbal health kits’ along with training materials and instructional information.

Given the lack of access to formal primary health in many remote villages of the project area, participants have expressed a need for improved access to affordable health care options. The HFRC responded with a plan for developing and distributing basic ‘herbal health kits’. Health kits typically include samples of herbal treatments such as:

- powder to prevent tooth decay;
- cream for callused and fissured heals;
- dietary supplement for debility;
- an expectorant cough syrup for chest colds;
- conditioning hair oils;
- and topical applications for arthritis.

Local healers, women and motivated community members have also been trained in the improved production and use of plant-based remedies to treat common and non-life threatening illnesses. Health training with community catalysts, predominantly women and vaidya’s, occurred in the following activities:

- Identification of common ailments, their symptoms and landmarks (identifying when or if the illness has progressed to the point where external intervention, either with a medical doctor or an ayurvedic physician, is required). Training is conducted by an Ayurvedic doctor.
- Preparation and use of herbal treatments conducted by Dr. Vedavathy and two Ayurvedic Doctors working with HFRC. Samples from the training workshops are supplied to communities in the form of herbal health kits.
The HFRC is working for the combined objectives of improving the delivery of primary health care and the conservation and sustainable use of medicinal plants through a number of activities. This includes the following:

- working in partnership with an established local NGO focused on primary health care and nutrition (PCT);
- raising awareness of and increase confidence in traditional and local health systems by distributing sample ‘herbal health kits’ to marginalized communities in rural areas;
- provide training to traditional healers and women in the diagnosis of common ailments, in identifying disease landmarks and in the associated, time-tested botanical-based treatments;
- providing training in the cultivation, sustainable harvest methods and low technology methods for processing of local herbal remedies;
- increasing access to commonly used medicinal plants by distributing plant material for cultivation in kitchen gardens, community gardens and reintroduction to degraded common forest areas.
- supporting the validation and safety testing of herbal remedies with modern, scientific methods.

**Objective 6**

*To continue with the training of vaidyas and marginalize people, particularly women from dalit and tribal villages, in the identification and sustainable harvest of selected medicinal plants, in low-input cultivation of specific species, and in the preparation and application of herbal treatments.*

Training workshops are typically held at the HFRC office in Tirupati and last 2-3 days. Participants are bused to the HFRC and accommodated at a nearby hostel. Over 20 training sessions with 5-7 women participants each have occurred to date and with vaidyas, approximately 6 sessions have occurred. Recipients of the training often serve as contacts and community liaisons for future HFRC involvement in the community. Also, the HFRC is currently developing a reference handbook of synonyms of diseases in local languages and in English.

In order to ensure a locally available supply of biologically diverse indigenous plant material, the HFRC offers training sessions for key participants from each village. To date, the project has supported training of individuals from 20 villages, of which 15 were Tribal colonies and five were dalit communities, on the following subjects:

- Identification of wild medicinal plants by a tribal NTFP collector skilled in the local taxonomy of medicinal plants and their uses;
- Domestication and cultivation of indigenous medicinal plants by agriculturalists and botany students of Dr. Vedavathy, trained by HFRC; and
- where cultivation is not an option due to land scarcity or poor soils, the reintroduction and sustainable harvest of medicinal forest species.

Training in the identification and cultivation of plants occurs at the HFRC Demonstration garden in Chandragiri, or in the forestland of participating communities.

**Objective 7**

*To determine the potential economic benefits of cultivating key medicinal plants, to encourage small scale cultivation of selected plants, and to organize a buy back facility in order to enhance*
the community's capacity for sustainable income generation while ensuring local access to biological resources.

The HFRC has conducted a market study on NTFPs and common use plants and established a nursery for the distribution of selected plants to farmers, collectors and users. At the time of the evaluation visit, the HFRC had proposed to establish a buy-back facility that would offer members of the tribal and dalit community a fair price for medicinal plants that are harvested/cultivated sustainably. The centre has also envisioned a plan to support small-scale enterprises to process common medicinal plants and provide marketing assistance. Neither of these activities have been further reported on in project documents.

**Objective 8**

*To identify and assess methods for facilitating local access to diverse genetic resources and ensure the equitable sharing of potential benefits that may arise out of product development and marketing initiatives.*

Although a precise benefit-sharing mechanism has yet to be designed, the HFRC is currently looking to other MAPPA recipients and external agencies for examples of applied ABS models. This should ideally be linked directly to the recognition of intellectual property rights for individual knowledge of healers, and community knowledge developed over generations. Although intellectual property is unlikely to be a concern where the focus is on commercializing commonly used herbal remedies, should future safety and efficacy tests reveal promising new marketable products based on local knowledge and innovations, a formal mechanism for sharing benefits derived from local knowledge must be agreed upon.

Project reports reveal that NTFP collectors require assistance with the formation of promotional marketing boards. These would be distinct from commercial corporations and would aid in bridging the gap between the low amount paid for raw MAP materials by the industry, and what the gatherers receive (Vedavathy, 1998). Such an organization could aid in the creation of equitable social contracts between collectors and the GCC, and inform NTFP collectors of their rights to access forest resources. There could be a role for HFRC in negotiating the establishment of such marketing boards, as a means to ensure the equitable sharing of benefits arising out of research and development supported by the project.

### 7.4.4 Sharing Lessons

The HFRC project is held up as a successful example of a strong regional-local partnership that works to build local capacity in order to support locally defined research. Although the research agenda is highly contextual, there are significant lessons to be learned and shared with other organizations working at the grassroots, and funding agencies supporting research on medicinal and aromatic plants.

Transferable lessons for other MAPPA recipients include:

- Strong leadership in the context of a multidisciplinary team with representation of both genders and the local community has been a key factor in the success of the HFRC project.
• Ensure that community members possess a shared commitment to meeting project goals by building rapport with each community and establishing a long-term commitment to the mutual exchange of information, the project has remained tied to a locally defined research agenda.
• Build strategic partnerships with other NGO’s, agencies and individuals that have existing capacity to address identified research needs in order to remain responsive despite a limited institutional capacity;
• Create an obvious incentive to conserve and sustainably use medicinal plants by demonstrating the potential of traditional health practice to provide culturally appropriate and accessible health care, and alternative sources of household income.

7.4.5 Recommendations

Recommendations for future activities to be conducted by the HFRC include:

1. Improve collaboration with the joint forest management programs where they exist in villages participating in the HFRC project, in order to broaden the scope of species reintroduction and ensure broader and continued access of tribals to non-timber forest products.

2. Conduct a post project social and gender analysis in order to understand the impacts of the awareness raising activities supported by the project on the behaviours, relationships and attitudes of community members. This would consider how the project has influenced the following factors:
   • the relationships between vaidyas and the community members/clients and state primary health care providers;
   • the extent to which traditional healers are willing to share knowledge of remedies and plants with peers and researchers;
   • participants’ access to project activities and resources with consideration to existing land tenure systems;
   • enhancing the perception of traditional health knowledge as a valuable community resource.

3. Develop an access and benefit sharing mechanism that will ensure the participant’s access to project results, credit for their contribution and an equal sharing in the benefits that derive from the project. In view of the fact that the research has largely focused on documenting and applying the knowledge of traditional healers and their communities, it is critical that measures be taken to ensure that the healers and/or their communities share in any benefits that may arise from the use or sale of products. Without such measures, there is a risk that the research findings may be commercialized by parties outside of the communities, with no benefit accruing to them. The next phase should therefore develop an appropriate mechanism that will ensure the participant’s access to project results, credit for their contribution and an equal sharing in the benefits that derive from the project.

In a Trip Report (February 21-23, 2001) produced by Dr. Karki following the original project evaluation visit, it was noted that HFRC staff is investigating the establishment of a formal arrangement between the tribal communities (represented by their respective Village level government, Panchayats) and the HFRC to share the benefits of therapeutic drugs which were based on traditional therapies and improved through HFRC supported research. Informally,
benefits have been returned to the community through the value-addition of tribal medical knowledge. One example is the use of capsules for powdered remedies, which has improved quality and assurance of proper dosages. Future phases should formally institutionalize this process and document the experience of the project in sharing benefits. The project could learn substantially from other SUB/IDRC funded research in the development of alternative ABS and IPR mechanisms.

4. Conduct **phytochemical studies** to investigate issues related to the quality of raw materials and the potential risks of a decline in quality of medicinally active components associated with the domestication and cultivation of previously wild harvested medicinal plants. This could be supported by conducting a literature review of available documentation on previous clinical trials and pharmacological, biochemical studies on plants and active ingredients in herbal therapies.

5. Support the training and capacity building of traditional healers and improve their **collaboration with public health sector** (through local Public Health Clinics), in order to reintroduce traditional medicine as an option for improving marginalized community’s access to culturally appropriate health care. Given the lack of access to formal primary health facilities (western, Ayurveda) for marginalized communities in Chittoor District, support of traditional health systems that are culturally appropriate, accessible and available, is critical. Supporting local vaidyas must occur simultaneously with a strategy to protect and sustainably use the diverse plant material that is the foundation of their practice.

The conceptual foundation of the project clearly links the conservation of medicinal plants and traditional knowledge systems with primary health care delivery. A number of issues and risks that are inherently linked to this should be investigated more systematically through the project. Given that the project uses primary health improvement as an incentive for conservation, there is a risk of the HFRC team becoming identified as primary health practitioners. For ethical as well as liability issues, the HFRC team must establish a clear protocol for how to address health awareness in marginalized communities. The HFRC should avoid attempting to offer health delivery services directly, but focus instead on building the capacity of local healers by offering training, developing forums for the exchange of knowledge, and by improving and validating local herbal remedies. Also, the HFRC should attempt to improve collaboration between local vaidyas and the local PHC network in order to improve the potential of providing accessible, affordable, safe, effective and culturally appropriate health care in marginalized areas.

In the year that has passed since the original project evaluation visit, the project has made some progress towards this recommendation, by further building on its relationship with the PCT, an NGO with experience in working in partnership with an established local NGO focused on primary health care and nutrition.

### 7.4.6 Conclusions

The small grant program of MAPPA fills an important funding niche in that it allows for field-based discoveries to occur and for each research project to be responsive to the local context. The HFRC project demonstrates that successful conservation of medicinal plants in a specific geographic area can be achieved by supporting activities that strengthen local capacity to identify and address locally defined priorities and to clearly demonstrate the relationship of these
priorities to biodiversity conservation. The following summary of activities demonstrates the very close fit between the program and project objectives:

- through its livelihood focus, work with NTFP collectors and joint forest management, the project has promoted innovative resource utilization and management strategies that involve local people and improving the equitable access to the benefits of the products of biodiversity;
- by offering awareness raising on local health options, offering training in the preparation of herbal remedies for common ailments, and ensuring sustainable access to necessary raw materials, the project has directly improve options for safe and effective health care;
- by focusing on the needs of women and marginalized tribal communities in Chittoor District, the project has directly benefited marginalized segments of the rural population and indigenous communities of India;
- the project has influenced local policymaking in the area of biodiversity, environment and health by raising awareness and confidence in traditional health systems and offering strategies for the sustainable management of biodiversity;
- ensure the continuity of project objectives beyond IDRC funding by demonstrating improved institutional and individual research capacity, and empowered local communities to sustainably use medicinal plants.
Annex 3 - Summary of Project Leader Survey Results

The survey conducted with MAPPA Project Leaders of the MAPPA Small Grant Projects is replicated below, followed by list of respondees and the responses, which are grouped according to the following subjects:

- Overall program strengths and recommendations
- Benefits to participation in MAPPA
- Strengths Weaknesses and Lessons (individual project)

Respondents are listed in alphabetical order according to the acronym of the recipient agency. The name of the Principal Investigator (and survey respondent) is listed in parenthesis under Project Recipient. As described above, nine of the 13 Project Leaders responded to the survey.

7.5 MAPPA Partner’s Opinion Survey


Note to Respondents

The MAPPA program is conducting a midterm evaluation in order to assess progress made towards its programming objectives. This questionnaire is being sent to all the Project Leaders/Coordinators of the currently ongoing or recently completed IDRC/MAPPA supported projects. The purpose of the questionnaire is to document your knowledge, ideas, suggestions, perceptions and lessons-learned during the course of implementation of and/or participation in the IDRC/MAPPA supported project and/or activity with your organization.

Responses are requested before February 4th and can be sent electronically to Reena Prasad at <rprasad@idrc.org.in> or by fax to 91 11 462-2707. Alternatively, it can be mailed to IDRC/SARO, 208 Jor Bagh, New Delhi, 110 003 (Attention Reena Prasad).

Thank you for your cooperation.

1. Respondent’s Name:

2. Organization Name:

3. Project Title:

4. Project Start Date:

5. Project Completion date (Actual/Expected):

6. What are the main strengths of your project?

7. What are the main weaknesses and challenges of your project?

8. For each project objective, please outline the expected and actual outputs and outcomes of the project using the following table: (Outputs are defined as physically observable and measurable products of a project. Outcomes are defined as changes in the behavior relationships, activities or action of target people or organization).
<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieved Outputs</th>
<th>Expected Outputs</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

9. What outputs from the project already produced or expected after the project completion could be useful to policy/decision makers? How?

10. Through what types of mechanisms do you plan to reach policy/decision makers? (please check all that apply):
   - ☐ provide project results to activists, NGOs, networks;
   - ☐ encourage decision makers to participate in the project;
   - ☐ lobby decision makers through publication of policy papers, presentations etc;
   - ☐ petition decision makers through the Panchayat system;
   - ☐ provide workshops, open meetings etc.
   - ☐ other:

11. Based on the lessons learned from your current MAPPA project, what would you change to improve the project design and implementation in future?

12. Please outline the key benefits you (individually) and your organization (institutionally) has derived from participating in the MAPPA Program.

13. Has your organization been involved in any new partnerships that have evolved out of your association with MAPPA? If yes, please describe:

14. Can you provide specific examples of how the IDRC/MAPPA program and other MAPPA projects or personnel have improved your work with regard to setting research priorities, developing research methods to be used, and implementing projects?

15. What lessons with regard to medicinal plant research can you share with other MAPPA partners?

16. Please identify any gaps or missed opportunities you have noted in the MAPPA program.

17. What recommendations would you give to improve information sharing and technical collaboration between and among MAPPA projects?

18. What recommendations can you give to improve the overall MAPPA program.

19. The MAPPA program is aimed at improving awareness, approaches, institutionalization and policies, all geared toward developing a system of sustainable use of medicinal plant resources in South Asia. Each MAPPA project is expected to contribute to the realization of this goal. To what extent has your project contributed / is contributing or can do so in future in this regard?
### 7.6 Project Leader Surveys Received:

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Organization</th>
<th>Project Title</th>
<th>Respondent/ Project Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>003</td>
<td>Indian Institute of Forest Management (IIFM)</td>
<td>Community Based Sustainable Management of Medicinal Plants in Betul District, Madhya Pradesh</td>
<td>Dr. Pradyut Bhattacharya</td>
</tr>
<tr>
<td>004</td>
<td>Canadian Centre for International Studies (CECI)</td>
<td>Development Methodologies for Sustainable Management of Endangered and High Valued Medicinal &amp; Aromatic Plants Centre in Jumla District</td>
<td>Sagun Bista</td>
</tr>
<tr>
<td>005</td>
<td>Industrial Technology Institute (ITI)</td>
<td>Value Added Products from Medicinal Plants for Community Based Rural Development Program</td>
<td>Lakshmi S.R. Arambewela</td>
</tr>
<tr>
<td>006</td>
<td>People's Clinic Trust (PCT) and Herbal Folklore Research Centre (HFRC)</td>
<td>Strengthening the Traditional Health Practices and Training in Cultivation of Medicinal Plants to the Women and Herbal Healers of District Chittoor in Andhra Pradesh</td>
<td>Dr. S. Vedavathy</td>
</tr>
<tr>
<td>007</td>
<td>Socio-Economic Agroforestry and Environment Concern (SAFE Concern)</td>
<td>Action Research on Medicinal Plants and Other Non-Timber Forest Products in Central Midhills Region, Nepal.</td>
<td>Damodar Prasad Parajuli</td>
</tr>
<tr>
<td>008</td>
<td>Pakistan Forest Institute (PFI)</td>
<td>In-Situ Conservation and Regeneration of Temperate Medicinal and Aromatic Plants through Community Participation</td>
<td>Shakeel Haider Zaidi</td>
</tr>
<tr>
<td>010</td>
<td>Herbs Production and Processing Co. Ltd. (HPPCL)</td>
<td>Study on Medicinal and Aromatic Plants Resources of Udaipur District, Nepal</td>
<td>Pradip Maharjan</td>
</tr>
<tr>
<td>012</td>
<td>Development of Biotechnology &amp; Environmental Conservation Center (DEBTEC)</td>
<td>Development Of Sustainable Conservation And Management Of Medicinal Plants In Bangladesh</td>
<td>Ferdousi Begum</td>
</tr>
<tr>
<td>013</td>
<td>Arya Vaidya Sala (AVS)</td>
<td>Development of Production to Consumption and Marketing Systems-based Strategies for the Sustainable Use of Medicinal Plants in the Western Ghats, Kerala</td>
<td>V.P.K. Nambiar</td>
</tr>
</tbody>
</table>
### 7.7 Project Leader Survey Responses:

#### 7.7.1 Overall Program Strengths and Recommendations

<table>
<thead>
<tr>
<th>Project Recipient</th>
<th>16. Please identify any gaps or missed opportunities you have noted in the MAPPA program.</th>
<th>18. What recommendations can you give to improve the overall MAPPA program?</th>
<th>19. The MAPPA program is aimed at improving awareness, approaches, institutionalization and policies, all geared toward developing a system of sustainable use of medicinal plant resources in South Asia. Each MAPPA project is expected to contribute to the realization of this goal. To what extent has your project contributed / is contributing or can do so in future in this regard?</th>
<th>17. What recommendations would you give to improve information sharing and technical collaboration between and among MAPPA projects?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVS (V.P.K. Nambiar)</td>
<td>NIL</td>
<td>Provide Opportunities for sharing innovative information among MAPPA researchers through national and international seminars.</td>
<td>Refer to response 8 (in Table 3) and 9: The small-scale enterprises involved in processing crude drugs will use the results extensively to identify genuine plants/plan parts and thereby eliminated the dangles of adulteration. The farmers will use the propagation techniques developed in the projects to cultivate the plants in their fields and foresters will be in a position to make use of the information generated in their biodiversity management and regeneration programmes. The beneficiaries will include medicine manufacturers whose supplies of genuine plants of known origin will stabilize and farmers for whom a new opportunity to improve their income will unfold. The Government will be immensely benefited in pushing its policy 'health for all' and in enlarging export opportunities.</td>
<td>Provide Opportunities for sharing innovative information among MAPPA researchers through national and international seminars.</td>
</tr>
<tr>
<td>CECI (Sagun Bista)</td>
<td>• Extrapolation of the research findings to wider beneficiaries. • Sharing of the findings in international forums. • Sharing with and to MAPPA other projects experiences</td>
<td>• Build holistic approach to sustainable livelihoods • Commitment to work together in sustainable livelihoods at list for critical mass time • Documentation of lessons learned from MAPPA projects • Linkage with governments for policy feedback.</td>
<td>The first challenge of this project was the people's attitude towards MAPs utilization. They use to think MAPs are found in forest and they should collect as much as possible. They also used to think that the cultivation of MAPs is not possible. Project spent its great effort to make people aware of sustainable utilization and cultivation. Community Forest user groups (CFUGs) as well as some farmers actively participated in the project from the beginning to In case of Nepal there is a Nepal NTFP Network (NNN). There must be similar network in other South Asian Countries. Make one Network of Networks and meet once a year. Make list serve of all the members of different networks and share information and possible technical collaborations. IDRC/MAPPA is suggested to take the lead as an umbrella organization.</td>
<td></td>
</tr>
<tr>
<td>Project Recipient</td>
<td>16. Please identify any gaps or missed opportunities you have noted in the MAPPA program.</td>
<td>18. What recommendations can you give to improve the overall MAPPA program?</td>
<td>19. The MAPPA program is aimed at improving awareness, approaches, institutionalization and policies, all geared toward developing a system of sustainable use of medicinal plant resources in South Asia. Each MAPPA project is expected to contribute to the realization of this goal. To what extent has your project contributed / is contributing or can do so in future in this regard?</td>
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</table>
| **DEBTEC** (Ferdousi Begum) | Genetic MAP or Genetic Finger printing should be started in some MAPPA project where the Principle Investigation is an expert which could strength the Biotechnology Research in medicinal plants in each country. | • Project should be long term basis (at least 5-7 years).  
• Training programme on cultivation of medicinal plants should be arranged regularly.  
• Project Fund should be increased with technical & personal development. | DEBTEC is committed to develop economically fruitful result from medicinal plants. DEBTEC has developed alternative income sources by the cultivation and conservation of medicinal plants In this regard Govt. of Bangladesh already have been motivated by DEBTEC activities. | • MAPPA people should meet by every 6 months and should discuss their outputs.  
• MAPPA Net (Internet) discussion should be developed. |
<p>| <strong>HFRC</strong> (Dr. S. Vedavathy) | So far none | Regular interaction with the other partners of MAPPA will improve the further development of network. In this regard may I request MAPPA to form a federation / association of partners? I feel the Newsletter should publish the activities of the MAPPA partners regularly. It must go to the public to know more about MAPPA and its activities. Recognition and sharing of the expertise should be there. | The Centre is one of the pioneers that brought to the public forum both the importance and need for conservation of medicinal plants in the state. Promoted extensively, the commercial cultivation of medicinal plants by farmers. Popularized some medicinal plants such as Bixa, Gymnema, Piper, Commiphera, Withania, etc. by linking to market. | Regular interaction with the other partners of MAPPA will improve the further development of net work. In this regard may I request MAPPA to form a federation / association of partners? |
| <strong>HPPCL</strong> (Pradip Maharjan) | Conservation Assessment and Management Planning (CAMP) which is aimed by the IDRC like development agencies is made possible only at the participatory approach. And ground reality is maximize people’s | We would like to see MAPPA program more focused towards sustainable rural income generation ultimately in attaining the aim of Conservation and sustainable utilization of the natural resources of MAPs. | In realizing the above goal of MAPPA, the completed project is successful in initiating sustainable use of MAPs in Udaipur, Nepal. And it needs further work to gear up sustainable utilization of MAPs at country level in Nepal. | A forum shall be formed with the experts and agencies involved in MAPPA projects for information sharing and avoiding duplication of the research. |</p>
<table>
<thead>
<tr>
<th>Project Recipient</th>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>16. Please identify any gaps or missed opportunities you have noted in the MAPPA program.</strong></td>
<td>Participation without gainful activities is almost impossible. Hence, it would be worthwhile to give ample room for fulfilling people’s needs and fit project objective in between to succeed.</td>
<td></td>
</tr>
</tbody>
</table>
| **17. What recommendations would you give to improve information sharing and technical collaboration between and among MAPPA projects?** | - Workshop on medicinal plants of herbal practitioners at national level.  
- Linking traditional health care system with the program.  
- Preparing bigger project linking watershed management aspects with medicinal plant cultivation.  
- MAPPA must prepare project papers outlining the lessons from each project. Such lessons could be tried out in other MAPPA projects to see their spatial / temporal impact. Policy level recommendations could emerge out of this approach especially pertaining to across the board findings.  
- Coordination/collaboration among MAPPA projects  
- Not withdraw projects after just two years of interventions, but plan for long term interventions.  
- Establishing a better institutional environment in the project area.  
- Revitalizing traditional knowledge systems. | - Our project has definitely been a major force in improving awareness among the local population on the need for cultivation and conservation of medicinal plants. Our focus has been redesigned in its approach in that cultivation needs to be focussed on areas with adequate water while plantations to be focussed on water deficient areas. We have been able to institutionalize the concept of herbal practitioner’s network, which could play a role in conservation of medicinal plants in the area. Policy level suggestions have not been provided so far and we plan to address this issue further in the future.  
- Regular forums for information sharing among the MAPPA partners would play a very positive role in dissemination of information.  
- Exposure visits across MAPPA projects would allow the partners know more about the work of others as well as adopt interventions. |
| **18. What recommendations can you give to improve the overall MAPPA program?** | Enable more interaction among members of MAPPA through meetings and electronic media  
Include training components in the program. | - The project is expected to lead to sustainable utilization of medicinal plants in the area, improve the awareness of the value of medicinal plants among the community. Enhance the quality of the products marketed by RITICOE and given free to the community through clinics. Generate more income to the community.  
- All MAPPA projects should be documented in fair detail along with the participating scientists and enable partners to access them through Internet. Prepare a list of all scientists that are involved in MAPPA programs and enable ready access to them. |
| **19. The MAPPA program is aimed at improving awareness, approaches, institutionalization and policies, all geared toward developing a system of sustainable use of medicinal plant resources in South Asia. Each MAPPA project is expected to contribute to the realization of this goal. To what extent has your project contributed / is contributing or can do so in future in this regard?** | The need for sustainable use of medicinal plants for the benefit of the people  
Nil | - The project is initial stages of its development. At this stage it is difficult to evaluate how much contribution will provide to improve awareness, institutionalization, policies and development toward sustainable use of medicinal and aromatic plants.  
- All MAPPA projects should be documented in fair detail along with the participating scientists and enable partners to access them through Internet. Prepare a list of all scientists that are involved in MAPPA programs and enable ready access to them. |

| PFI (Shakeel Haider Zaidi) | 1. Coordination among the projects must be strengthened.  
2. Training should be provided to the project team members.  
3. There must be opportunities like seminars, workshops for the project teams | Since the project is initial stages of its development. At this stage it is difficult to evaluate how much contribution will provide to improve awareness, institutionalization, policies and development toward sustainable use of medicinal and aromatic plants. | 1. Coordination among the projects must be strengthened.  
2. Training should be provided to the project team members.  
3. There must be opportunities like seminars, workshops for the project |
<table>
<thead>
<tr>
<th><strong>Project Recipient</strong></th>
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<th><strong>19. The MAPPA program is aimed at improving awareness, approaches, institutionalization and policies, all geared toward developing a system of sustainable use of medicinal plant resources in South Asia. Each MAPPA project is expected to contribute to the realization of this goal. To what extent has your project contributed / is contributing or can do so in future in this regard?</strong></th>
<th><strong>17. What recommendations would you give to improve information sharing and technical collaboration between and among MAPPA projects?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFE Concern</td>
<td>Almost all forestry projects are long term enterprises. To observe any effects at least 5 years are required. More time and additional financial supports are needed to realize the full benefits of earlier investments. Long term support is seen as an opportunity to this project.</td>
<td>The way in which MAPPA is working towards sustainable use of medicinal and aromatic plants in South Asia is encouraging. South Asian countries have a lot of similarities and differences not only in geography and climate but also in culture and traditions. The program that MAPPA is organizing is a good forum of learning too. In this respect it should now think one step ahead to bring best technologies to each country in South Asia regarding cultivation and domestication and sustainable use of commercially valuable MAPs. Therefore new technologies amalgamated with the indigenous knowledge should be special focus in this regard. For this cross country technicians exchange programs should be organized so that the technicians learn and adopt the latest and viable technology so that cultivation, development and sustainable use of medicinal and aromatic plants is ensured.</td>
<td>Already contributed in realizing the goal, Expected more towards the completion of the project.</td>
<td>teams to meet together to share their experiences and views among scientists of the south asian countries.</td>
</tr>
</tbody>
</table>

1. Exposure to project co-ordinator/Technical adviser in national/international seminars, study tours and exchange visits to other MAPPA project. 2. Financial/technical supports are expected in publishing the findings of research in journals and scientific papers
### 7.7.2 Benefits to Participation in MAPPA

<table>
<thead>
<tr>
<th>Project Recipient</th>
<th>12. Please outline the key benefits you (individually) and your organization (institutionally) have derived from participating in the MAPPA Program.</th>
<th>13. Has your organization been involved in any new partnerships that have evolved out of your association with MAPPA? If yes, please describe:</th>
<th>14. Can you provide specific examples of how the IDRC/MAPPA program and other MAPPA projects or personnel have improved your work with regard to setting research priorities, developing research methods to be used, and implementing projects?</th>
</tr>
</thead>
</table>
| AVS (V.P.K. Nambiar) | • Created an aptitude for undertaking research in the institution.  
• Problems in the identity of genuine raw drugs could be solved to a great extent.  
• The institution has received an international reputation because of undertaking this research programme.  
• The equipments and other infrastructure acquired through this programme have been of great use for ongoing research. | Collaboration with CSIR and IICT (Hyderabad) in research programmes. | Helping in developing research methods in general. |
| CECI (Sagun Bista) | **Personal Benefit:** Participation in International workshops, which was very useful in getting exposure to the outer situation as well as sharing my own experience with others.  
The fellowship provided by IDRC for the training on “Sustainable NTFP management for Rural Development” which will be very much useful to my recent project work as well as to development of my career.  
**Institutional Benefit**  
• CECI recognized as key stakeholder in NTFP sector of Nepal  
• Research documentation transferable to other CECI’s NTFP sector of Nepal  
• Partnership with different institutions involved in NTFPs/MAPs  
• Exploration of intervention to Sustainable Livelihood through Natural Resource Management | No. But due to the experience gained by my organization in NTFP/MAP sector it is planning the programs on NTFPs as an income generating activities in the new CECI projects. | Before IDRC/MAPPA project CECI was mostly involved in general development projects. CECI supported the forestry sector to strengthen Community Forest User Groups in Nepal. It was also encouraging people to manage and cultivate MAPs providing technical and financial support. Beside these, the research studies carried out in NTFP/MAP sector were short-term studies. The research experts only were involved. IDRC/MAPPA has helped to encourage local people and institute to involve them in the research project also. |
| DEBTEC (Ferdousi Begum) | As Investigator I am particularly benefited because my Background is in Plant Genetic Engineering, so I am directly benefited, our Institution is highly benefited from the project because now DEBTEC has become the partners of Govt. decision making process for Medicinal Plant Activities. | Yes, we can be involved with Govt. of Bangladesh. Near future we can also submitted the Sustainable Environment Management Programme for medicinal plant database. | Training in Nepal 2001  
CAMP process in Nepal 2001 |
| HFRC (Dr. S. Vedavathy) | The HFRC in general and myself in particular have gained much by associating with IDRC/MAPPA. The personal gain is that I could disseminate the traditional knowledge got through the project activities to the people who are interested in traditional knowledge & medicinal plants of this state in giving consultancy and training. Recently HFRC is asked to train the CHWs & ANMs of “Society | HFRC is involving it self with other NGOs who are Periodical supportive supervision of MAPPA personnel and their guidance helped a lot to develop the organization and to extend its activities to other fields.
<table>
<thead>
<tr>
<th>Project Recipient</th>
<th>12. Please outline the key benefits you (individually) and your organization (institutionally) have derived from participating in the MAPPA Program.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HPPCL (Pradip Maharjan)</td>
<td>interested. The organisation also got recognition as Centre for training traditional knowledge and cultivation &amp; domestication of medicinal &amp; aromatic plants. The investigator got recognition in the forest department of Andhra Pradesh as resource person in their various programs and policy decisions.</td>
<td>for elimination of rural poverty (SERP), &amp; Integrated child development services (ICDS) that are working in the district.</td>
<td>This is my first experience with the IDRC/MAPPA in research work, which gave me an ample opportunity in rectifying my knowledge in working with the diverse field of organization.</td>
</tr>
<tr>
<td>IITI (Lakshmi S.R. Arambewela)</td>
<td>MAPPA program has enabled me to meet several scientists working in the field of medicinal plants, visit their organizations and factories and attend seminars; These exposures have enabled me to improve my research activities and also participate in a community development program. The organization has acquired a few equipments from the project. It has been able to participate in community</td>
<td>Our organization has been involved in community development program of RITICOE through MAPPA project.</td>
<td>MAPPA program has enabled me to meet several scientists working in the field of medicinal plants, visit their organizations and factories and attend seminars; These exposures have enabled me to improve my research activities.</td>
</tr>
<tr>
<td>IIFM (Dr. Pradyut Bhattacharya)</td>
<td>At personal level: • Understanding of MAPPA objective and CAMP exercise in the programs funded by it. • MAPPA program approach and priorities for the research and conjenial-working attitude. At institutional level: • HPPCL being a parastatal and a commercial enterprise felt a good experience in working together with a research-oriented institute like MAPPA. It was indeed a very good mixture of varied work priority &quot;Commercial Enterprise vis a vis Research Cooperation entity &quot;. And resulted a very positive outcome in the development endeavor of both the agencies.</td>
<td>SRUB, the local partner NGO, has been selected as a long-term partner for forestry related interventions in the region. We plan to work on certain issues of community forestry together over the next few years. TRAFFIC, India has also been supportive of the efforts of IIFM in the conservation and cultivation of medicinal plants</td>
<td>IDRC/MAPPA program has been greatly instrumental in creating the awareness amongst us that research priorities must be set in the present policy context and local level conditions. Participatory research methodology, as adopted by the project, could provide good results as far as conservation aspects go, but cultivation must not be attempted unless there are clear indications that water would not be scarce commodity.</td>
</tr>
</tbody>
</table>

**IIFM** (Dr. Pradyut Bhattacharya)

This project has been the first of its kind for me in many ways. I have personally had the rich experience of working with the community and it has built my capacities to address this issue in a broader sense in the future. The area that we were working in was backward and tribal belt with great many challenges for us. We are now better equipped to tackle our future work in the same area.

The organizations during the course of the project also got to conduct two training programmes on medicinal plants. It also provided the much-needed interface to discuss medicinal plant issues over a wider platform during MAPPA meetings at Pokhara, Nepal.

**ITI** (Lakshmi S.R. Arambewela)

MAPPA program has enabled me to meet several scientists working in the field of medicinal plants, visit their organizations and factories and attend seminars; These exposures have enabled me to improve my research activities and also participate in a community development program.

The organization has acquired a few equipments from the project. It has been able to participate in community...
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</tr>
</thead>
<tbody>
<tr>
<td>PFI (Shakeel Haider Zaidi)</td>
<td>Participation in MAPPA program give an opportunity to work with the local communities in the development of medicinal and aromatic plants. While institution will get further exposure to play its role in poverty alleviation and conservation awareness at community level.</td>
<td>Nil</td>
<td>Since the project is in the initial stage and we are working on different aspect of medicinal plants and can not predict any achievement at this stage.</td>
</tr>
<tr>
<td>SAFE Concern (Damodar Prasad Parajuli)</td>
<td>Individual benefits: Knowledge gained on techniques of nursery operation on some of the valuable NTFPs, Confidence development on working with local communities, Knowledge gained in resource assessment, More informations on market and marketing of products, etc. Institutional benefits: Good will, Establishment as a competent NGO in the promotion of Medicinal plants and other NTFPs.</td>
<td>Yes, the project was successful to create awareness about medicinal plants in the Dhungkharka region. Encouraged from the huge potential of medicinal plants on the rural economy the Village Development Committee (VDC) and SAFE Concern jointly prepared a proposal to United Nations Community Development Fund (UNCDF) to support on various aspects of medicinal plants and the proposal have been approved and the work is going on. Through these partnership 30,000 seedlings; 15000 each of <em>Sweria chiraita</em> (Chiraito) and <em>Taxus baccata</em> (Lauth Salla) have been distributed to the local farmers and community forest user groups for plantation in their private land and forest areas. Rest of the money is being used for construction of a huge water storage tank in the VDC. This tank will supply water in the market area of that VDC. This type of communal work apart form regular work carried out by SAFE Concern jointly with other organization has led people to be more involved and be more participatory in the regular programs.</td>
<td>Dr. M B Karki, Dr. N K Bhattarai and other personnel including other MAPPA projects had been instrumental in setting reseach priorities, developing methods and implementing programs. Their regular visits to project areas and their advise during that periods had also been very fruitful to move towards right tracks.</td>
</tr>
</tbody>
</table>
### 7.7.3  Project Strengths, Weaknesses and Lessons

<table>
<thead>
<tr>
<th>Recipient Agency</th>
<th>6. What are the main strengths of your project?</th>
<th>7. What are the main weaknesses and challenges of your project?</th>
<th>11. Based on the lessons learned from your current MAPPA project, what would you change to improve the project design and implementation in future?</th>
<th>15. What lessons with regard to medicinal plant research can you share with other MAPPA partners?</th>
</tr>
</thead>
</table>
| AVS (V.P.K. Nambiar) | • An efficient project team who could carry out the field an laboratory studies as per the target.  
• Co-operation with Government and NGO's.  
• Interaction with cultivators and drug manufacturers. | • In situ and ex-situ conservation  
• Sustainability and attempts to restore depleting resources of medicinal plants.  
• Purity of the raw drugs.  
• Research for rectifying problems in harvesting, semi processing and storage. | • Field orientated approach with the participation of cultivators. | • We can share the germplasm accessions of 20 species studied.  
• We can help other organizations in the tested propagation methods of selected species.  
• The M.O.U. developed with the cultivators will be a model for others. |
| CECI (Sagan Bista) | • The Project was based on needs expressed by local people and are actively participated by the community level stakeholders  
• Competent and sincere professionals | Challenges:  
• The project area was in very remote district, which was not connected by road from any part of the country. Land holding capacity of people in the project area is very low. It was very difficult to convince people to participate in the research project and provide their land.  
• People's negative attitude towards survival of high altitude MAP in lower altitudes. It took an effort to convince people about possibility of cultivation of MAPs in their community forest and also in Private land.  
Weakness  
• High expectations with limited time and budget. | • Will design the longer-term project to accomplish all the results expected.  
• Will not separate the designed project into two phases. | • Participation of local people in the design and implementation of research projects is very essential.  
• Knowledge of regulatory framework and legal approval from the authority are prerequisites in NTFP/MAP researches. |
| DEBTEC (Ferdousi Begum) | • Our Commitment to the Development of Medicinal Plants Conservation Program in Bangladesh.  
• Our Team Work (Service), Human Resources.  
• Our Target group (Particularly Women.) | • To Maintain the continuity.  
• To set up Market linkage.  
• To develop actual income by the implementation of the project.  
• Seedling of Medicinal plant.  
• Transport system (We need our own vehicle, which could be the more effective for smooth monitoring of the project.) | To implement this project I have an experienced that in Bangladesh we need Workshop, CAMP process and Training Program on Medicinal plants. | Cultivation & Conservation of Medicinal Plant in FRLHT Bangalore, India. |
| HFRC (Dr. S. Vedavathy) | • Expertise on medicinal plants, with 15 years of research experience on Phytochemistry & Pharmacology.  
• Field personnel have expertise in | • The duration of two years is not sufficient to reach the expected goals, because the villagers/tribals are not in a position to receive us | • A separate wing for social mobilization & institutional development can be built for mobilizing the community for follow up action and sustaining the benefits. The activities can | • So far there is no interaction with other MAPPA partners except during formal meetings where the agenda is fixed. It is good to have regular |
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| HPPCL (Pradip Maharjan) | Identification, collection and cultivation of medicinal plants. They can identify 200 medicinal plants with their botanical names and families for some.  
- As the principal Investigator was working as lecturer at degree college, Botany students were used in establishing initial rapport with the villages during the survey.  
- Multidisciplinary staff.  
- Promoted herbal medicine pharmacy, which ensured continuous supply of herbal medicines for free distribution in the health camps and to Peoples Clinic.  
- Partner ship with an NGO working in primary health care and Nutrition.  
- Rich biodiversity in Seshachalam hills range | and respond immediately. We have to instill confidence in them by making number of visits and meetings that too in the late night since tribals gather at night after the day’s work. This is a challenge.  
- The project does not have the provision for the purchase of land for demonstration garden. The project has to vacate the land leased in three times. So every time plants have also to be shifted.  
- Tribal villages in the remote pockets were selected. Travel to those places in the absence of a own vehicle proved to be a tedious exercise | be extended further by opening a regular Training Centre to improve the knowledge base and sustenance to the rural youth / women. At the same time validation of the best practices identified by the Centre are necessary to build confidence and recognition. | Contacts with other partners of MAPPA, which can help to develop the net work. It is also equally good to share the experiences.  
- How ever the documentation of local health traditions is not an easy task and it should be done with zeal & commitment by building good rapport with the healers. |

*Conservation Assessment and Management Planning (CAMP) which is aimed by the IDRC like development agencies is made possible only at the participatory approach. And ground reality is maximize people’s participation without gainful activities is almost impossible. Hence, it would be worthwhile to give ample room for fulfilling people’s needs and fit project objective in between to succeed.*
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| **IIFM** (Dr. Pradyut Bhattacharya) | • Community Based Conservation Approach (Use of JFMCs).  
• Medicinal plant network as a platform for information sharing and revitalization of indigenous knowledge and practices. | • The project suffered a setback to its cultivation extension efforts due to insufficient rains for two consecutive years.  
• Unwillingness on behalf of tribal medicine men to reveal their knowledge.  
• Motivating the poor tribal groups was taking a long time as this was their first exposure to medicinal plant cultivation.  
• The market prices of MAPs have fluctuated tremendously during the project tenure, leading to a fall in motivation levels of the farmers. | In the future we would focus on cultivation with farmers who have irrigation facilities. For those who do not have water, we would focus on agroforestry plantations in the bunds of agricultural land and intercropping with agricultural crop also in the degraded areas. | • Herbal Practitioners network experience and it could be extended to other areas.  
• Medicinal plants cultivation especially in drier areas.  
• How to motivate most backward tribals for MAP program.  
• NGO as a working partner was also tried out and worked very successfully.  
• Concept of apprenticeship as a mode of knowledge dissemination across generations worked well.  
• Focus on degrading and wastelands as interventions across small farmers. |
| **ITI** (Lakshmi S.R. Arambewela) | • Availability of a community based NGO (RITICOE) to benefit from the project outputs and develop products to the market  
• The availability of a community in Ritigala depending on the medicinal plants in the area.  
• Availability of multidisciplinary staff at ITI to assist in the project | • Continuous change of staff of RITICOE and the project.  
• Difficulty for RITICOE to obtain funds to fully implement the results of the project.  
• Delay in setting up of a processing center for herbal products at Ritigala | When dealing with community based development programs it is difficult to fit into specific time schedules set up by us as their decision makings of the community based organizations are slow. | • The need for sustainable use of medicinal plants for the benefit of the people.  
• The need to test the medicinal plants for a wide range of bioactivities prior to development of value added products |
| **PFI** (Shakeel Haider Zaidi) | Principal Investigator : One  
Ethno-botanist : One  
Supporting Staff : Three  
Ministerial : One  
Total : Six | The main weakness of project is lack of full power of attorney to the principal investigator due to which the project activities can not be proceed independently. I have to take prior permission from Inspector General of Forests Islamabad, who is also holding current charge of Director General, Pakistan Forest Institute, Peshawar stationed in Islamabad for even | As the project is in early stage, therefore, no major change can not be suggested in the project regarding design and implementation. | Standardization of cultivation and regeneration techniques of profitable medicinal and aromatic plants and their marketing. |
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| SAFE Concern (Damodar Parajuli) | • The project has been able to create awareness among the Community Forestry Users Groups, local farmers and other communities in and around the project sites regarding the importance of medicinal plants to uplift the rural economy.  
• Nursery technology is available and the local people are capable to raise seedling and cutting at nurseries. Two permanent forest nurseries have been established, the continual supply of the good stock of planting material of medicinal plants to the farmers that can be cultivated in those areas is now ensured.  
• Our project activities are compatible with the existing rules and regulations of the Government to promote NTFPs at the project sites.  
• Local farmers, Community Forest Users Group (FUGs) and local Village Development Committee personnel are taking ownership on this project.  
• No marketing problems in the use of raw materials that are produced by the FUGs since two-way communication is already done between the resource users (DABUR/N, Herb Production and Processing Company, etc) and the producers.  
• Domestication and harvesting techniques of some of the high valued NTFPs already tried and got success.  
• Farmers have been trained to produce herbal tea from their own cultivation. This tea is prepared by mixing the locally available medicinal | Project is operating only in a small area with a limited number of people. Technology developed by this project in respect to in nursery operation, propagation, harvesting regime, field trials of propagated materials need to be tested for a longer periods to assure its success. Thus, the experience gained in this short period may not be replicable at similar conditions of the country. More action research on NTFPs are needed for better results. Keeping these weaknesses into consideration, continuation of such activities to realize full goal with the limited resources seems to be our major challenges. | SAFE-Concern would like to change the future project as follows:  
• Large number of seedling production from a few species for commercial cultivation at Community Forests, Leasehold forests and Government forests  
• Involvement of local people, focus groups and other targeted beneficiaries from the beginning of project design to implementation.  
• Capacity building activities of the local NGOs/CBOs  
• Effective networking activities with other similar projects  
• Instead of conducting research on large number of species a few species will be selected based on prioritization.  
• Future project will focus on gender issue, equitable benefit sharing, processing of harvested products for value addition, etc.  
• Co-operative development for enterprise development | All MAPPA partners should work in an organized manner to avoid the duplication of research works. A networking with MAPPA partners is necessary for the extension of the findings. All MAPPA partners in Nepal should share their ideas and special focus should be given to promote good quality commercially valuable species like Chiraito, bhojo, Lauth Salla etc (after prioritization). |
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<td>and aromatic plants found in their surroundings. Now people have already started producing this herbal tea for household consumption with good future of large-scale production. This project is helping to extend the market of this herbal tea through advertising campaigns. • FUGs at Dhungharka site developed a project proposal on the promotion of NTFPs with the help of our project and received a small from the District Development Committee of Kavre Palanchowk (Project district).</td>
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### Policy Influence / ‘Closing the Loop’

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<td>AVS (V.P.K. Nambiar)</td>
<td>The small scale enterprises involved in processing crude drugs will use the results extensively to identify genuine plants/plan parts and thereby eliminated the dangles of adulteration. The farmers will use the propagation techniques developed in the projects to cultivate the plants in their fields and foresters will be in a position to make use of the information generated in their biodiversity management and regeneration programmes. The beneficiaries will include medicine manufacturers whose supplies of genuine plants of known origin will stabilize and farmers for whom a new opportunity to improve their income will unfold. The Government will be immensely benefited in pushing its policy ‘health for all’ and in enlarging export opportunities.</td>
<td>☑️ Provide project results to activists, NGOs networks; ☑️ Encourage decision makers to participate in the project; ☑️ Provide workshops, open meetings etc.</td>
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<td>CECI (Sagun Bista)</td>
<td>Study on best management practices of some MAPs will be useful to policy makers and planners to decide the steps for conservation of MAPS for example to ban or open the collection of studied MAPs.</td>
<td>☑️ provide project results to activists, NGOs, networks; ☑️ encourage decision makers to participate in the project; ☑️ provide workshops, open meetings etc.</td>
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<td>DEBTEC (Ferdousi Begum)</td>
<td>By our workshop, Market Survey, Documentation, of indigene knowledge, Go &amp; NGO meeting dialogue &amp; recently publication of booklets. Govt. of Bangladesh specially Prime Minister Begum Khaleda Zia already announced that this (2002) year the National Tree Fair will be on “Medicinal Plants” Govt. will set up a committee for policy &amp; legislating on Medicinal Plants. DEBTEC is the initiator of all these activities.</td>
<td>☑️ Provide project results to activists, NGOs, networks; ☑️ Encourage decision makers to participate in the project; ☑️ Provide workshops, open meetings etc; ☑️ Petition decision makers through the village system; ☑️ Petition decision makers through the village system; ☑️ other: We have already published A Hand Book of Commercially Important 20 Medicinal Plants in Bangladesh Drama Program for Television &amp; we have already done expansive Project</td>
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<td>HFRC (Dr. S. Vedavathy)</td>
<td>1. Documentation of rich herbal folklore of the district and endemic and endangered species reported by the centre clearly shows the need for • The establishment of a gene bank at the district level or University level • Demonstration gardens at every mandal head quarters as part of waste land development • Work for the patents for the knowledge of the uses of medicinal plants • Recognition for the herbal healers for their contribution to primary health care. 2. Conservation of Medicinal plants: • The district has rich potential for cultivation of M.P. Eg. The centre has demonstrated that Decalepis hamiltonii an endangered &amp; endemic species that is banned by GCC for procurement from the wild, can be cultivated in large scale. • The Centre has distributed medicinal plants including 6 tree species to all the schools in Tirupati. HFRC encouraged the students to maintain the M.P in the school premises. This experience shows that certain species of M.P can be grown in public places, Municipal parks, Government institutions along with horticultural plants. • All the grass root level health &amp; development workers, like, ICDS- Anganwadi workers, Gramasevikas, Traditional Dais, should be given training in (editor’s note: respondent did not check any boxes, but instead added the following text) The Centre has developed as a resource centre on Medicinal plants in the state. The principal investigator has published many articles and mimeos in both local and national newspapers &amp; journals. The centre has introduced the plant Bixa orallenna to the farmers of the state for publishing it in news papers &amp; journals for commercial cultivation. People from different walks of life are approaching the Centre for guiding the cultivation of M.P in large scale. The Centre has been actively involved in the state and outside in participating the debates symposia etc. on aspect of conservation of Medicinal plants sponsored by Govt. and other private institutions.</td>
<td>☑️ provide project results to activists, NGOs, networks; ☑️ encourage decision makers to participate in the project; ☑️ provide workshops, open meetings etc.</td>
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Recipient Agency | 9. What outputs from the project (already produced or expected after the project completion) could be useful to policy/ decision makers? How? | 10. Through what types of mechanisms do you plan to reach policy/ decision makers?
--- | --- | ---
HPPCL (Pradip Maharjan) | • traditional medicine for primary health care. • Medicinal plants and uses should be included in the curriculum of students up to Intermediate level as special paper. **3. Strengthening of Traditional health practices** • The Centre in its survey identified 30 well known practices of the District which were Validated clinically and some pharmacologically and have been proved effective. It has been found that the herbal healers are serving the larger population in the rural area where there is no modern health facilities. The healers will survive well who are in large number provided they will get their due recognition from the Govt. agencies there by we can restore the age old system of medicine in the fore front. • Regular workshops and symposia should be conducted to the herbal healers to introduce them to modern therapeutics. • Since there is vast knowledge available with the Yanadi tribal community the govt. should pro actively secure the patent rights either to the individual healers or to their institutions. | ☑️ provide project results to activists, NGOs, networks /

| ☑️ provide workshops, open meetings etc. |

IIFM (Dr. Pradyut Bhattacharya) | • Herbal practitioners network and providing them identity cards for their services could be introduced by the Ministry of Health and Family Welfare, thereby encouraging the alternate health care system. • Few selected MAP has been tested in the dry areas, which can be extended in the similar areas of central India. • The tribal apprentice concept was developed for the tribal youth. This may be started in other areas for keeping alive the traditional knowledge system. • Monitoring the area over a period would provide information over the ecological status of medicinal plants in the area – this could provide legislative guidelines over the harvesting rights of certain endangered medicinal plants. | ☑️ provide project results to activists, NGOs, networks; 

| ☑️ encourage decision makers to participate in the project; 

| ☑️ lobby decision makers through publication of policy papers, presentations etc; |

ITI (Lakshmi S.R. Arambewela) | Quality assessed herbal drugs will be useful to decision makers to seek markets. New value added products developed from the project will enhance the income. Medicinal plants growing in the community will be profitably utilized. | ☑️ provide project results to activists, NGOs, networks; 

| ☑️ encourage decision makers to participate in the project; 

| ☑️ provide workshops, open meetings etc. |

PFI (Shakeel Haider Zaidi) | The outputs from the project expected after completion will be useful to policy/decision makers as it will reflect the actual situation at community level. It will provide facts and means by the help of which we can follow different measures to elevate the socio-economic condition and conservation awareness of medicinal and aromatic plants at grass root level. This will facilitate the decision makers to make good policies for poverty reduction and better conservation of natural resources through community participation. | ☑️ provide project results to activists, NGOs, networks; 

| ☑️ encourage decision makers to participate in the project; 

| ☑️ lobby decision makers through publication of policy papers, presentations etc; 

| ☑️ petition decision makers through the Panchayat system: 

| ☑️ provide workshops, open meetings etc. 

| ☑️ Other: 

| 1. lobby decision makers through publication of policy papers, presentations etc. 

| 2. provide workshops, open meetings etc. 

<p>| 3. encourage decision makers to participate in the project. |</p>
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| SAFE Concern (Damodar Prasad Parajuli) | The following outputs are already produced from the project:  
- Simple and cost effective nursery technology that is suitable for the rural areas,  
- Harvesting tools developed for the sustainable management of resources  
- Vegetative propagation techniques of some of the high value NTFPs developed,  
- Awareness created among the local FUGs and farmers on the importance of NTFPs  
- Techniques already developed in maximizing the biomass production of Taxus baccata for income generation.  
- Research back up in prioritizing the species for commercial production | ☑ encourage decision makers to participate in the project; (YES)  
☑ lobby decision makers through publication of policy papers, presentations etc; (Yes)  
☑ petition decision makers through the Panchayat system; (No)  
☑ provide workshops, open meetings etc. (Yes)  
☑ other: Demonstration of success areas (Yes) |
Annex 4 - List of principal documents and other resources consulted

7.8 Project-related Documents Reviewed:

002: The Society for Himalayan Environment and Research (SHER)


SHER, No year provided. Program Description of Society for Himalayan Environmental Research (SHER), “Glimpses of CHAMP (Conservation and Cultivation of Himalayan Aromatic and Medicinal Plants) Approach of SHER”. Dehradun, UP.


003: Indian Institute of Forest Management (IIFM)

IIFM, 1999b. Project Proposal: “Community Based Sustainable Management of Medicinal Plants in Madhya Pradesh” Submitted to MAPPA, IDRC, by the Indian Institute of Forest Management (IIFM). No date provided.


004: Canadian Centre for International Studies (CECI)


005: Industrial Technology Institute (ITI) and RITICALA Community based Development and Environmental Management Foundation (RITICOE).


006: People's Clinic Trust (PCT) and Herbal Folklore Research Centre (HFRC)
HFRC, 1994. Phase I Project Proposal: “Strengthening the Traditional health practices and training in cultivation of medicinal and aromatic plants to the women and herbal healers of
Chittoor District, AP”, submitted to MAPPA, IDRC, by the Herbal Folklore Research Centre (HFRC), 1994.

HFRC, 1997. HFRC Correspondence to Madhav Karki – “Case Study of the NTFPs in Chittoor District”; December 1, 1997. From Dr. Vedavathy of the Herbal Folklore Research Centre.


007: Socio-Economic Agroforestry and Environment Concern (SAFE Concern)


SAFE Concern, No date provided. Report Training Lesson Plan: “Training on NTFPs including Medicinal and Aromatic Plants (MAPs)” for the project: Action Research on Medicinal Plants and other Non-timber Forest Products in Central Midhills Region, Nepal, submitted to MAPPA, IDRC, by Socio-Economic Agroforestry and Environment Concern (SAFE Concern), No date provided.
008: Pakistan Forest Institute (PFI)


009: Indian Environmental Society (IES)


010: Herbs Production and Processing Co. Ltd. (HPPCL)


011: Husein Ebrahim Jamal (HEJ) Research Institute of Chemistry
Processing of Plant Based Raw Materials of Homeopathic Medicines by the Local Communities in Pakistan”, June 24, 2000.


7.9 Additional Documents:


Mountain Development and the Food and Agriculture Development Centre of the German Foundation for International Development.


Karki, Madhav. 2001b. Email correspondence to SUB team – re: “MAPPA/SUB PI - Regional Presence in Asia”. No date provided.

Karki, Madhav. No date provided. “Emerging Interdependence between Biodiversity Conservation and Sustainable Development in South Asia” (publication not stated)